NUEXCO

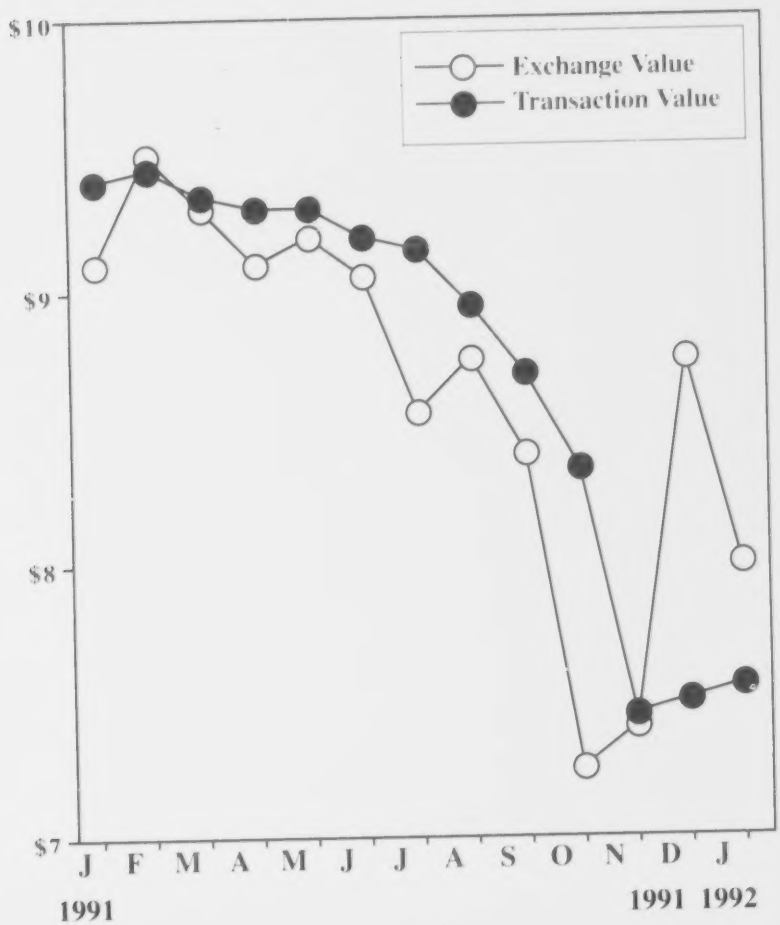
Monthly Report

February 1992 Number 282

Cogema to Purchase UG 13

Ontario Hydro 20

Euratom in a New Europe 31



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- **Ontario Hydro**

Ontario Hydro is the largest nuclear utility in Canada, operating 18 nuclear power reactors with a capacity totalling almost 13 thousand MWe. The utility's 81 hydroelectric, fossil-fueled, and nuclear generating stations have a total capacity of 31,472 MWe. Hydro delivers power to municipal utilities, and large industrial consumers, and to several hundred thousand customers in rural and remote areas.

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As the European Community approaches its thirty-fifth anniversary, it faces new challenges in opening markets to competition during a period of recession in the West. The degree to which the Community emphasizes protectionism, rather than open competition in world markets, will have a profound effect on international trade.

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To Our Readers

NUEXCO will be hosting a hospitality suite at the US Council for Energy Awareness Fuel Cycle '92 Conference to be held March 22-25 in Charleston, South Carolina. We look forward to seeing you there.

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MARKET REVIEW

Market Values Summary

NUEXCO Market Values	This Report January 31, 1992	Last Report December 31, 1991	12 Months Ago January 31, 1991
EXCHANGE VALUE [1]	**$8.00** / lb equivalent U_3O_8	$8.75	$9.10
UF_6 VALUE [2]	**$24.50** / kg U as UF_6	$26.00	$27.50
LOAN RATE [3]	**3.0%** / annum	3.0%	3.5%
CONVERSION VALUE [4]	**$1.60** / lb U as UF_6	$1.55	$1.45
SWU VALUE [5] **(0.3 % tails assay)**	**$71** / SWU	$70	$51
TRANSACTION VALUE [6]	**$7.55** / lb equivalent U_3O_8	$7.50	$9.40
Transactions	**28**	26	18
Months	**3**	3	3
Millions of Pounds	**8.5**	8.0	3.1

DEFINITIONS

1 The **Exchange Value** is NUEXCO's judgment of the price at which transactions for significant quantities of natural uranium concentrates could be concluded as of the date indicated.

2 The **UF_6 Value** is NUEXCO's judgment of the price at which spot and near-term transactions for significant quantities of natural uranium hexafluoride could be concluded as of the date indicated.

3 The **Loan Rate** is NUEXCO's judgment of the annual interest rate at which uranium loans could be concluded as of the date indicated.

4 The **Conversion Value** is NUEXCO's judgment of the price at which spot and near-term transactions for significant quantities of conversion services could be concluded in the secondary market as of the date indicated.

5 The **SWU Value** is NUEXCO's judgment of the price at which spot and near-term transactions for significant quantities of enrichment services could be concluded as of the date indicated.

6 The **Transaction Value** is a weighted average price of recent natural uranium sales transactions. The calculation is based on prices paid in:

a) Transactions closed within the previous three month period for which delivery is scheduled within one year of the transaction date;

b) At least ten transactions;

c) Transactions involving a sum total of at least 2 million pounds equivalent U_3O_8.

DERIVATIONS AND COMMENTS

- All **Market Values** are expressed in terms of US$.
- All **Market Values** are based on:
  - Data from recently completed transactions.
  - Data from pending transactions.
  - Firm bids to buy or borrow, and firm offers to sell or lend.
  - Prices purchasers or rates borrowers have expressed a willingness to pay, but for which NUEXCO is not aware of firm bids to buy or borrow and prices sellers or rates lenders have expressed a willingness to accept, but for which NUEXCO is not aware of firm offers to sell or lend.
- Prices associated with deliveries under old or renegotiated contracts or other than arm's-length transactions are not included in the determination of these **Market Values**.
- In the determination of prices, NUEXCO does not consider charges for transportation other than that customarily provided by suppliers.
- The prices of services or materials delivered under long-term contracts with primary suppliers are not considered in the determination of the listed values.
- For the **SWU Value**, NUEXCO converts SWU prices at varying tails and product assays to equivalent SWU prices at a tails assay of 0.30 weight-percent U^{235} and a product assay of 3.0 weight-percent U^{235}, assuming feed costs corresponding to the NUEXCO **Exchange Value** and **Conversion Value** determined as of the same date.
- In calculating the **Transaction Value**, NUEXCO does not account for the price of uranium delivered in connection with contracts which call for "market price" mechanisms. This exclusion applies particularly to contracts in which delivery prices are expressed as a function of future **Exchange Values** or any other indeterminate variable. Also excluded from the calculation are any other transactions in which the delivery price is defined in such a way that it can not currently be determined.
- The sample time for the **Transaction Value** is extended as necessary to satisfy the minima for the number of transactions and quantity of material. Other currencies are converted to US dollars using conversion rates in effect on or near the transaction date.

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MARKET REVIEW

FEBRUARY MARKET REVIEW

(as of January 31, 1992)

OVERVIEW

The NUEXCO Exchange Value fell $0.75, to $8.00 per pound U_3O_8, as aggressive sellers pursued limited demand during the first half of January. Market activity proved sporadic, with most transactions occurring during the second week of the month.

Eight concentrates sales were reported, totalling over 1.5 million pounds equivalent U_3O_8 for near-term delivery (**Table 1**). No natural UF_6 transactions were reported, but the UF_6 Value declined $1.50, to $24.60 per kgU as UF_6, following the price decline in the concentrates market. One near-term enriched UF_6 sale was reported containing a small quantity of equivalent feed and SWU. Two transactions were reported in the long-term market, involving 2.3 million pounds equivalent U_3O_8 for 1994-1998 delivery.

January's nine near-term transactions for over 1.5 million pounds equivalent U_3O_8 of natural and enriched uranium well exceeds the average for January activity. In the previous five years, January activity averaged only four near-term transactions totalling less than 800 thousand pounds equivalent U_3O_8.

The Conversion Value edged up $0.05, to $1.60 per pound U as UF_6. Only one near-term transaction was reported for a moderate quantity of conversion services. The Loan Rate remained unchanged at 3.0 percent per annum. Four loans totalling almost 1.2 million pounds equivalent U_3O_8 were reported.

The SWU Value continued its steady ascent, climbing one dollar, to $71 per SWU. One near-term sale was reported involving SWU contained in EUP, and three long-term enrichment transactions, completed in 1991, were also reported.

Table 1
NEAR-TERM URANIUM SALES SUMMARY

	January 1991		Year-to-Date	
	No. of Sales	Volume[1]	No. of Sales	Volume[1]
Concentrates	8	1.5	8	1.5
Natural UF_6	0	0.0	0	0.0
EUP	1	<0.1	1	<0.1
Total[2]	**9**	**1.5**	**9**	**1.5**

[1] Million pounds equivalent U_3O_8
[2] Due to independent rounding, columns may not equal total.

NATURAL URANIUM AND CONVERSION

The concentrates market began the year in the upper $8 range, but as sellers sought to place material, they were forced to offer progressively lower prices to conclude sales. Prices had risen rapidly during the end of 1991, peaking in December. Prices then declined, as potential buyers, influenced in part by expectations of an increase in supply, deserted the market. As a result, the **Exchange Value** declined $0.75, to **$8.00** per pound U_3O_8, with most of the drop occurring early in the month. The majority of the sales occurred during the second week of January. None of the reported transactions occurred in the first or third weeks. By the end of the month, selling pressure appeared to ease somewhat and a few discretionary buyers re-entered the market to evaluate offers. These actions limited the price decline.

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Eight near-term concentrates transactions were reported, for a total exceeding 1.5 million pounds equivalent U_3O_8. At least six sales were made by US entities, with producers and intermediaries actively selling material during the month. Utilities, producers, and intermediaries all made purchases; these buyers included both European and US companies. All eight transactions called for delivery within the next three months and nearly all were concluded at price levels at or near the January 31 Exchange Value.

* * *

The **UF_6 Value** dropped $1.50, to **$24.50** per kgU as UF_6. The January UF_6 market was inactive with no natural UF_6 transactions reported. This 5.8 percent price drop still yields a UF_6 Value at a slight premium over the sum of the value of its components—concentrates and conversion. This reflects the current situation in the market of limited, but sufficient, UF_6 supply available to meet any emerging UF_6 demand.

* * *

In the long-term uranium market, two transactions were reported, both of which occurred in mid-1991. Two utilities purchased a total of 2.3 million pounds equivalent U_3O_8 in the form of concentrates from US producers for delivery during the period 1994-1998.

* * *

The **Transaction Value** climbed $0.05, to **$7.55** per pound U_3O_8, continuing to reflect the low-priced, high-volume sales of November and early December. The January 31 Transaction Value was based on 28 transactions over 3 months involving 8.5 million pounds equivalent U_3O_8.

* * *

Active uranium supply declined by approximately one million pounds for the second consecutive month, falling to **3.0** million pounds equivalent U_3O_8. **Active uranium demand** climbed by over 600 thousand pounds, to **1.5** million pounds equivalent U_3O_8. In the face of declining prices, sellers were less aggressive toward month end, even as lower prices caused a few discretionary buyers to re-enter the market. Nevertheless, active supply is twice the demand level with the supply/demand ratio at 2.0.

* * *

The **Loan Rate** remained at **3.0** percent per annum. Loan supply declined from 6.0 million pounds, to 1.4 million pounds (**Table 2**), as some potential lenders withdrew from the market. Nevertheless, almost 1.2 million pounds equivalent U_3O_8 were borrowed by intermediaries during January. US and European utilities lent both concentrates and UF_6 in the four loans reported for the month.

* * *

The **Conversion Value** edged up $0.05, to **$1.60** per pound U as UF_6, as the market has become increasingly uncertain regarding future conversion supplies at current price levels. Only one transaction was reported in which a utility purchased a moderate quantity of conversion services at a price that can be evaluated near the January 31 Conversion Value.

Table 2
NEAR-TERM SUPPLY/DEMAND SUMMARY

	Active Supply[1]	Active Demand[1]
• Uranium (thousand lbs equivalent U_3O_8)	3,045	1,525
• Supply/Demand Ratio:	2.0	
• Loan (thousand lbs equivalent U_3O_8)	1,395	0
• Conversion (thousand lbs U as UF_6)	880	1,280
• SWU (thousand SWUs)	400	95

[1] Supply and Demand tables in the Market Review section of this Report provide details for each category.

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MARKET REVIEW

ENRICHMENT SERVICES AND ENRICHED URANIUM PRODUCT

The **SWU Value** continued its ten-month climb, increasing one dollar, to **$71** per SWU. Pending demand combined with less aggressive sellers led to this price strengthening. Market activity was limited during January, but several buyers are expected to solicit offers within the next two months.

Only one near-term transaction, involving an unidentified buyer purchasing small quantities of equivalent feed and SWU contained in enriched uranium product (EUP), was reported. Three long-term SWU sales also were reported, but all involved utility purchases for small quantities made during 1991 for delivery in the second half of this decade.

Table 3
ENRICHMENT PRICES
(January 31, 1992)

Prices	This Month Report 282	Last Month Report 281	12 Months Ago Report 270
NUEXCO SWU Value ($US per SWU)	71	70	51
US DOE SWU prices: ($US per SWU)			
USEC	121.50[1]	121.50[1]	117.85[2]
AFC	153.00[3]	153.00[3]	153.00[3]
Requirements	157.00[3]	157.00[3]	157.00[3]
Incentive Price (IP2)	104.67[4]	104.67[4]	100.68[5]
Calculated worth of enriched UF_6[6]: ($US per KgU as UF_6)			
2.0 % U^{235}	222	227	198
2.5 % U^{235}	311	318	274
3.0 % U^{235}	404	412	352
3.5 % U^{235}	498	508	431
4.0 % U^{235}	595	606	512
4.5 % U^{235}	692	705	593

[1] Effective 10/1/91.
[2] Effective 10/1/89 to 9/30/91.
[3] Effective since 10/1/84.
[4] Provisional IP2 for FY92: Effective 10/1/91 to 9/30/92, for up to 30% of annual requirements.
[5] IP2: Effective 10/1/90 to 9/30/91, for up to 30% of annual requirements.
[6] Calculated using the NUEXCO Exchange Value, Conversion Value, SWU Value and 0.30 % ^{235}U tails assay.

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RECENT TRANSACTIONS

Uranium Sales [1]

NUEXCO Transaction Number	Delivery Period	Approximate Quantity (thousand pounds equivalent U_3O_8s)	Price Within Percentage Range [2] of Current Exchange or UF_6 Value	Buyer	Seller	Remarks
5330	1992	Less Than 50	98-102	Producer	Producer	
5332	1994-98	1,001-3,000	See Remarks	Utility	Producer	Occurred in mid-1991
5333	1994-97	601-1,000	See Remarks	Utility	Producer	Occurred in mid-1991
5340	1992	50-100	98-102	Producer	R	
5341	1992	101-300	98-102	Utility	Intermediary	
5342	1992	301-600	98-102	Utility	Intermediary	
5343	1992	50-100	98-102	R	Intermediary	
5351	1992	101-300	R	R	Intermediary	
5352	1992	101-300	90-97	Intermediary	Producer	
5354A	1992	Less Than 50	See Remarks	R	Intermediary	Contained in EUP
5356	1992	101-300	98-102	R	Intermediary	

R means that NUEXCO either does not know, or that NUEXCO has restricted that information to protect client or source confidentiality.

[1] Transactions listed are not limited to those in which NUEXCO was involved, but also include others of which NUEXCO is aware. NUEXCO may delay reporting some transactions in order to protect proprietary information.

[2] The ranges *Below 90, 90-97, 98-102, 103-110, Above 110,* represent percentages (rounded to whole numbers) of the appropriate current Exchange Value or UF_6 Value. The endpoints of each range are included within that range.

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RECENT TRANSACTIONS

Natural Uranium Loans [1]

NUEXCO Transaction Number	Delivery Period	Approximate Quantity (thousand pounds equivalent U_3O_8)	Price Within Percentage Range [2] of Current Loan Rate	Borrower	Lender	Remarks
5344	1991	101-300	Above 110	Intermediary	Utility	
5345	1991	101-300	Above 110	Intermediary	Utility	UF_6
5350	1992	101-300	Above 110	Intermediary	Utility	UF_6
5355	1992	601-1,000	98-102	Intermediary	Utility	

Conversion Sales [1]

NUEXCO Transaction Number	Delivery Period	Approximate Quantity (thousand pounds of U equivalent)	Price Within Percentage Range [2] of Current Conversion Value	Buyer	Seller	Remarks
5349	1992	101-300	R	Utility	Intermediary	

Enrichment Sales [1]

NUEXCO Transaction Number	Delivery Period	Approximate Quantity [3] (thousand SWU)	Price Within Percentage Range [2] of Current SWU Value [4]	Buyer	Seller	Remarks
5334	1996-97	50-100	R	Utility	R	1991 Transaction
5335	1996-97	Less Than 50	R	Utility	R	1991 Transaction
5336	1996-98	50-100	R	Utility	R	1991 Transaction
5354B	1992	Less Than 50	See Remarks	R	Intermediary	Contained in EUP

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[2] The ranges *Below 90, 90-97, 98-102, 103-110, Above 110,* represent percentages (rounded to whole numbers) of the appropriate current Market Value. The endpoints of each range are included within that range.

[3] If tails assay is unknown or unspecified, NUEXCO's calculation of SWU quantity assumes 0.30 % tails assay.

[4] Prices are usually normalized to 0.30 % tails assay. When prices and SWU values are expressed as discounts from a reference price (e.g., **X** dollars less than DOE's USEC base price at time of delivery), the percentage price range is based on the discounted prices, not on the reference price.

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SUPPLY AND DEMAND

Uranium Supply

NUEXCO Project Number	Quantity (Thousand Pounds equivalent U_3O_8) Spot or Near-term [1]	Intermediate or Long-term [2]	Delivery Period	Remarks
AVAILABLE TO PURCHASE:				
ACTIVE				
91-1505	500	—	1992	
91-1506	500	—	1992	
91-1507	500	—	1992	
91-1511	260	—	1992	UF_6
91-1512	785	—	1992	UF_6
90-1231*	500	500 per year	1992-1995	
91-1268*	—	600 per year	1992-1999	
TOTAL	**3,045**			
INACTIVE	**4,930**			
AVAILABLE TO LOAN:				
ACTIVE				
92-1008*	495	—	—	UF_6
92-1017*	900	—	—	U_3O_8
TOTAL	**1,395**			
INACTIVE	*None reported*			

* New or revised since last month.

[1] For delivery within one year, measured from the date of this Report. This category excludes material deliverable within one year under other than spot or near-term contracts.

[2] For delivery beyond one year, measured from the date of this Report.

Active Projects reclassified as Inactive since last month: 91-1502
Active Projects removed since last month: 90-1057A, 91-1084, 91-1219, 91-1220, 91-1241, 91-1260, 91-1292

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MARKET REVIEW

SUPPLY AND DEMAND

Uranium Demand

NUEXCO Project Number	Quantity (Thousand Pounds equivalent U_3O_8) Spot or Near-term [1]	Intermediate or Long-term [2]	Delivery Period	Remarks
INQUIRIES TO PURCHASE:				
ACTIVE				
91-1247*	500	—	1992	UF_6
91-1297	150	—	1992	
92-1000*	390	—	1993	UF_6
92-1021*	250	—	1992	
92-1027*	100	—	1992	
92-1029A*	120	—	1992	UF_6c
92-1034*	15	—	1992	
91-1118	—	300 per year	1993-1998	U_3O_8/UF_6
91-1184	—	350 per year	1993-1997	
91-1290	—	310 per year	1995-1999	U_3O_8/UF_6
91-1294	—	250 per year	1996-2000	
92-1015*	—	1,300 per year	1995-2004	
91-1197	—	2,210	1992-1997	U_3O_8/UF_6
91-1227A	—	60	1992-1994	UF_6c
91-1232A*	—	500	1993-1994	UF_6c
91-1283	—	5,225	1994-2000	U_3O_8/UF_6
92-1030*	—	5,500	1992-1993	U_3O_8/UF_6
TOTAL	**1,525**			
INACTIVE	**1,600**			
INQUIRIES TO BORROW:	*No inquiries to borrow are reported*			

* New or revised since last month.

[1] For delivery within one year, measured from the date of this Report. This category excludes material deliverable within one year under other than spot or near-term contracts.

[2] For delivery beyond one year, measured from the date of this Report.

Active Projects reclassified as Inactive since last month: *none*
Active Projects removed since last month: 91-1245, 91-1272, 91-1293A, 91-1516.

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SUPPLY AND DEMAND

Conversion Supply and Demand

NUEXCO Project Number	Quantity (Thousand Pounds U as UF_6) Within 3 Years[1]	Beyond 3 Years[1]	Delivery Period	Remarks
AVAILABLE FOR SALE:				
ACTIVE				
91-1500	440	—	1992	
91-1501	440	—	1992	
TOTAL	**880**			
INACTIVE	*None reported*			
INQUIRIES TO PURCHASE:				
ACTIVE				
91-1174*	660	—	1992	
91-1275	620	—	1992	
91-1299	—	330	1993-1997	
TOTAL	**1,280**			
INACTIVE	*None reported*			

* New or revised since last month.

[1] Measured from the date of this Report.

Active Projects reclassified as Inactive since last month: *none*
Active Projects removed since last month: 91-1301.

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MARKET REVIEW

SUPPLY AND DEMAND

SWU Supply And Demand

NUEXCO Project Number	Quantity (Thousand SWUs) Spot or Near-term [1]	Quantity (Thousand SWUs) Intermediate or Long-term [2]	Delivery Period	Remarks
AVAILABLE FOR SALE:				
ACTIVE				
91-1509	200	—	1992	
91-1515*	200	—	1992	
TOTAL	**400**			
INACTIVE	**685**		—	
INQUIRIES TO PURCHASE:				
ACTIVE				
92-1029B*	25	—	1992	UF6e
92-1031*	70	—	1992	
90-1196	—	60 per year	1995 on	
91-1142	—	75 per year	1995-2000	
92-1016*	—	170 per year	1996-2006	
91-1152	—	2,700	1995-2001	
91-1171	—	560	1995-1998	
91-1227B	—	35	1992-1994	UF6e
91-1232B*	—	500	1993	UF6e
91-1250	—	45	1993	UF6e
92-1024*	—	20	1993	
TOTAL	**95**			
INACTIVE	**185**			

* New or revised since last month.

[1] For delivery within one year, measured from the date of this Report. This category excludes material deliverable within one year under other than spot or near-term contracts.

[2] For delivery beyond one year, measured from the date of this Report.

Active Projects reclassified as Inactive since last month: *none*
Active Projects removed since last month: *none*

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MARKET VALUES EXPRESSED IN SELECTED CURRENCIES

Exchange Value[1]

Country (currency)	per lb equivalent U_3O_8 as Concentrates			per kg U as Concentrates		
	This Month (Jan 31, 1992)	Last Month (Dec 31, 1991)	12 Months Ago (Jan 31, 1991)	This Month (Jan 31, 1992)	Last Month (Dec 31, 1991)	12 Months Ago (Jan 31, 1991)
Australia (dollar)	10.66	11.51	11.59	27.71	29.93	30.14
Belgium (franc)	265.78	273.69	280.09	690.97	711.54	728.16
Canada (dollar)	9.40	10.11	10.57	24.43	26.29	27.47
EC (ecu)	6.31	6.53	6.63	16.41	16.96	17.23
Finland (markka)	35.16	36.15	32.87	91.41	93.97	85.44
France (franc)	43.96	45.33	46.04	114.29	117.84	119.68
Germany (mark)	12.90	13.26	13.57	33.55	34.46	35.27
Italy (lira)	9,696	10,040	10,171	25,207	26,102	26,442
Japan (yen)	1,006	1,092	1,195	2,616	2,839	3,106
Netherlands (guilder)	14.52	14.94	15.25	37.75	38.83	39.65
So. Africa (comm. rand)	22.42	23.99	23.18	58.27	62.36	60.26
So. Korea (won)	6,113	6,639	6,525	15,892	17,260	16,963
Spain (peseta)	811.61	845.08	847.69	2,110	2,197	2,204
Sweden (krona)	46.87	48.42	50.61	121.84	125.89	131.58
Switzerland (franc)	11.48	11.87	11.52	29.84	30.86	29.96
Taiwan (dollar)	200.00	223.12	242.29	519.96	580.07	629.91
UK (pound)	4.48	4.68	4.64	11.65	12.17	12.07
US (dollar)	8.00	8.75	9.10	20.80	22.75	23.66

Transaction Value[1]

Country (currency)	per lb equivalent U_3O_8 as Concentrates			per kg U as Concentrates		
	This Month (Jan 31, 1992)	Last Month (Dec 31, 1991)	12 Months Ago (Jan 31, 1991)	This Month (Jan 31, 1992)	Last Month (Dec 31, 1991)	12 Months Ago (Jan 31, 1991)
Australia (dollar)	10.06	9.87	11.97	26.15	25.66	31.13
Belgium (franc)	250.83	234.59	289.32	652.10	609.89	752.17
Canada (dollar)	8.87	8.67	10.91	23.05	22.53	28.37
EC (ecu)	5.96	5.59	6.85	15.49	14.54	17.80
Finland (markka)	33.18	30.98	33.95	86.27	80.55	88.26
France (franc)	41.49	38.85	47.55	107.86	101.00	123.63
Germany (mark)	12.18	11.36	14.02	31.66	29.54	36.44
Italy (lira)	9,150	8,606	10,506	23,789	22,373	27,314
Japan (yen)	949.81	935.98	1,234	2,469	2,433	3,209
Netherlands (guilder)	13.70	12.80	15.76	35.62	33.28	40.96
So. Africa (comm. rand)	21.15	20.56	23.94	55.00	53.45	62.25
So. Korea (won)	5,769	5,690	6,740	14,998	14,794	17,522
Spain (peseta)	765.95	724.36	875.64	1,991	1,883	2,276
Sweden (krona)	44.23	41.51	52.28	114.99	107.90	135.92
Switzerland (franc)	10.83	10.17	11.90	28.17	26.45	30.95
Taiwan (dollar)	188.75	191.25	250.28	490.71	497.20	650.67
UK (pound)	4.23	4.01	4.79	10.99	10.43	12.47
US (dollar)	7.55	7.50	9.40	19.63	19.50	24.44

[1] As of May 1991 Report #273; calculated using currency exchange rates for the last business day of the month, as published in *The Wall Street Journal*. Prior to May 1991 Report #273; calculated using currency exchange rates published in *The Wall Street Journal* on the last business day of the month.

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MARKET REVIEW

MARKET VALUES EXPRESSED IN SELECTED CURRENCIES

Conversion Value[1]

Country (currency)	per lb U as UF_6			per kg U as UF_6		
	This Month (Jan 31, 1992)	Last Month (Dec 31, 1991)	12 Months Ago (Jan 31, 1991)	This Month (Jan 31, 1992)	Last Month (Dec 31, 1991)	12 Months Ago (Jan 31, 1991)
Australia (dollar)	2.13	2.04	1.85	4.70	4.50	4.07
Belgium (franc)	53.16	48.48	44.63	117.19	106.89	98.39
Canada (dollar)	1.88	1.79	1.68	4.14	3.95	3.71
EC (ecu)	1.26	1.16	1.06	2.78	2.55	2.33
Finland (markka)	7.03	6.40	5.24	15.50	14.12	11.55
France (franc)	8.79	8.03	7.34	19.38	17.70	16.17
Germany (mark)	2.58	2.35	2.16	5.69	5.18	4.77
Italy (lira)	1,939	1,779	1,621	4,275	3,921	3,573
Japan (yen)	201.28	193.44	190.39	443.75	426.45	419.74
Netherlands (guilder)	2.90	2.65	2.43	6.40	5.83	5.36
So. Africa (comm. rand)	4.48	4.25	3.69	9.88	9.37	8.14
So. Korea (won)	1,223	1,176	1,040	2,695	2,593	2,292
Spain (peseta)	162.32	149.70	135.07	357.86	330.03	297.75
Sweden (krona)	9.37	8.58	8.06	20.66	18.91	17.78
Switzerland (franc)	2.30	2.10	1.84	5.06	4.64	4.05
Taiwan (dollar)	40.00	39.52	38.61	88.18	87.14	85.11
UK (pound)	0.90	0.83	0.74	1.98	1.83	1.63
US (dollar)	1.60	1.55	1.45	3.53	3.42	3.20

SWU Value And UF_6 Value[1]

Country (currency)	SWU Value at 0.30 % Tails Assay			UF_6 Value per kg U as UF_6		
	This Month (Jan 31, 1992)	Last Month (Dec 31, 1991)	12 Months Ago (Jan 31, 1991)	This Month (Jan 31, 1992)	Last Month (Dec 31, 1991)	12 Months Ago (Jan 31, 1991)
Australia (dollar)	94.60	92.11	64.97	32.64	34.21	35.03
Belgium (franc)	2,359	2,190	1,570	813.95	813.26	846.41
Canada (dollar)	83.39	80.89	59.21	28.78	30.04	31.93
EC (ecu)	56.02	52.20	37.15	19.33	19.39	20.03
Finland (markka)	312.05	289.17	184.19	107.68	107.41	99.32
France (franc)	390.15	362.60	285.01	134.63	134.68	139.12
Germany (mark)	114.52	106.04	76.04	39.52	39.39	41.00
Italy (lira)	86,050	80,321	57,002	29,693	29,834	30,737
Japan (yen)	8,932	8,736	6,696	3,082	3,245	3,611
Netherlands (guilder)	128.86	119.49	85.48	44.46	44.38	46.09
So. Africa (comm. rand)	198.94	191.89	129.90	68.65	71.27	70.05
So. Korea (won)	54,252	53,111	36,567	18,721	19,727	19,718
Spain (peseta)	7,203	6,761	4,751	2,486	2,511	2,562
Sweden (krona)	415.93	387.38	283.95	143.53	143.88	152.95
Switzerland (franc)	101.88	94.95	64.59	35.16	35.27	32.83
Taiwan (dollar)	1,775	1,785	1,358	612.50	662.99	732.20
UK (pound)	39.75	37.44	26.01	13.72	13.91	14.03
US (dollar)	71.00	70.00	51.00	24.50	26.00	27.50

[1] As of May 1991 Report #273; calculated using currency exchange rates **for** the last business day of the month, as published in *The Wall Street Journal*. Prior to May 1991 Report #273; calculated using currency exchange rates published in *The Wall Street Journal* **on** the last business day of the month.

RECENT DEVELOPMENTS

France

Cogema to Purchase UG

In mid-January, Cogema, the French fuel cycle conglomerate, announced the pending purchase of a majority interest (between 51 percent and 70 percent) in Urangesellschaft mbH (UG) of Germany. Based on more recent information, Cogema, wholly owned by Commissariat à l'Energie Atomique (CEA), will purchase approximately 60-percent of UG from its principal owners, VEBA and STEAG.

UG is currently owned by the Germany energy group VEBA (33.3 percent), the utility PreussenElektra AG (PREAG)—a wholly owned subsidiary of VEBA (11.7 percent), and by STEAG AG (55 percent) which is also controlled by VEBA. Vereinigte Elektrizitäts und Bergwerks Aktiengesellschaft, renamed VEBA AG in 1970, is one of Germany's largest companies; its primary activities involve electricity, petroleum, chemicals trading, and transportation. VEBA holds the controlling interest in STEAG AG through two companies— Gesellschaft für Energiebeteilligung (GfE) and Ruhrkohle AG (the largest coal mining company in Germany)—which together own over 96 percent of STEAG. VEBA ultimately controls over 67 percent of UG, through its interest in STEAG and PREAG.

The exact ownership shares of each company in UG following completion of the sale have not yet been announced, although it is known that VEBA-controlled entities will maintain at least a 30-percent interest in UG. The transaction must be reviewed by anti-trust authorities in both countries, and accordingly, will not be finalized for a few months.

The purchase would be another step in Cogema's efforts to diversify its activities within the uranium industry. UG's ownership interests in various mining properties worldwide complement Cogema's current properties. Selected ownership interests of each company are shown in **Figure 1**. UG owns shares of uranium projects in Namibia, Australia, the USA, Niger, and Canada. With the UG purchase, Cogema would acquire: an additional interest in Somair in Niger; an indirect interest in Kiggavik (a property in the Baker Lake region of the Northwest Territories, which will geographically diversify its Canadian ownership interests, currently all Saskatchewan properties—Cigar Lake, Cluff Lake, and McArthur River); additional shares in Energy Resources of Australia (particularly since Pancontinental, a company partially owned by Cogema, sold its Jabiluka deposit to ERA); an indirect, 5-percent share of the Rössing deposit in Namibia; and additional properties in the USA (Gas Hills, Wyoming).

Another asset in the UG portfolio is its joint-venture relationship with Techsnabexport of the former Soviet Union. That joint venture, Internexco, was established in 1989 to market Soviet uranium and services in Germany, Switzerland, Austria, and The Netherlands. This relationship could give Cogema another source of supply, as well as a possible means of improved access to the newly opened east European marketplace.

Finally, there is UG's trading and brokerage activities, which may complement the business of Interuran, an established European uranium intermediary, 75-percent of which is owned by Cogema. How UG's and Interuran's businesses could or would be integrated has not been indicated by either company.

VEBA and Cogema have had previous joint business dealings, including a 1989 memorandum of understanding in which Cogema would hold a 51 percent share and VEBA, a 49-percent share of a joint venture that would operate the UP3 fuel reprocessing plant at LaHague, France. This established a relationship between Cogema and UG's parent that certainly provided improved channels of communication and negotiation. And the relationship probably helped this purchase agreement be well-received in both Germany and France. Once authorized, Cogema's purchase of UG will exemplify the continuing, and often dramatic, trend of consolidation within the uranium industry.

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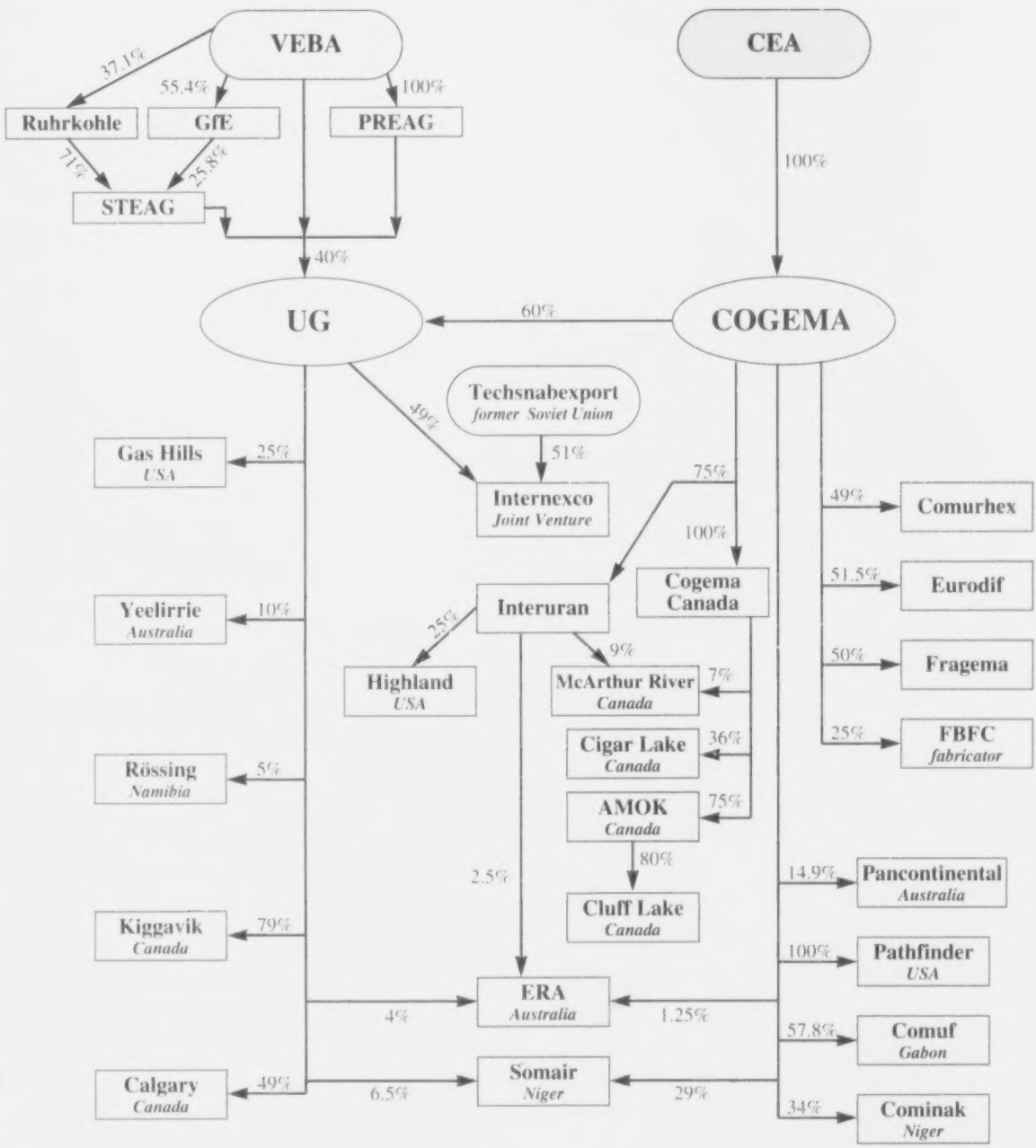
RECENT DEVELOPMENTS

Figure 1
COGEMA–URANGESELLSCHAFT OWNERSHIP INTERESTS



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RECENT DEVELOPMENTS

SOUTH AFRICA

1991 Uranium Production

For the eighth consecutive year, uranium production in South Africa declined significantly. In 1991, total production from Chamber of Mines members dropped 34 percent from 1990's level, falling to 4.1 million pounds equivalent U_3O_8 (**Table 1**). Compared to each preceding quarter, production dropped 25 percent in the first quarter, increased 2.5 percent and 6.0 percent respectively in the second and third quarters, then dropped almost ten percent in the fourth quarter.

Of the nearly 2.1 million pound decrease for the year, over 570 thousand pounds (27 percent) can be attributed to the shutdown of Freegold (formerly the Free State Joint Metallurgical Scheme) and the East Rand Gold and Uranium Company (ERGO). Buffelsfontein production declined 291 thousand pounds from its 1990 level. The company announced in the third quarter that it would cease uranium production as soon as possible, and did so early in the fourth quarter. Hartebeestfontein also produced at lower levels throughout the year; its total was down 20 percent, to 579 thousand pounds. Production cuts at Vaal Reefs accounted for most of the remaining decrease. In the fourth quarter of 1990, Vaal Reefs announced that production at its west uranium plant was being cut by 50 percent and that production at its east plant had been suspended for at least three months or until market conditions improved. As a result, Vaal Reefs' 1991 production declined by 1.1 million pounds (55 percent of the total 1991 decrease), to 2.4 million pounds equivalent U_3O_8.

Of all of the uranium-producing members of South Africa's Chamber of Mines, only Western Areas showed an increase in production climbing ten percent in 1991, to 639 thousand pounds. The augmented output was the result of improved ore grade.

The year 1991 was historic for South Africa, as major steps were taken that advanced social and political reform and consequently resulted in the lifting of economic sanctions against South Africa by most countries. However, even though South African origin uranium became once again permissible in the world market, depressed market prices for uranium as well as gold has, in many cases, made production uneconomic. It is likely that the viability of uranium production in South Africa will continue to erode in 1992, for without improved market conditions, it will be difficult for South African uranium producers to regain their lost market share.

Table 1

SOUTH AFRICA 1991 URANIUM PRODUCTION[1]

(thousands of pounds U_3O_8)

Operation	TOTAL 1990	First Quarter 1991	Second Quarter 1991	Third Quarter 1991	Fourth Quarter 1991	TOTAL 1991	Percent Change[2]
Buffelsfontein	699	139	135	134	0	408	-41.6
ERGO[3]	213	3	0	5	0	8	-96.2
Freegold[4]	368	0	0	0	0	0	-100.0
Hartebeestfontein	725	139	142	142	156	579	-20.1
Vaal Reefs	3,575	555	588	633	659	2,434	-31.9
Western Areas	579	155	153	164	167	639	+10.4
TOTAL[5]	**6,159**	**992**	**1,017**	**1,078**	**982**	**4,069**	**-33.9**

1 Excludes Palabora Mining Company, which is not a member of the Chamber of Mines.
2 Change in percent from the 1990 totals.
3 ERGO = East Rand Gold and Uranium Company Ltd.
4 Formerly Free State Joint Metallurgical Scheme.
5 Columns may not add up due to rounding.

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RECENT DEVELOPMENTS

WASHINGTON FOCUS

by Linda L. Gunter

With several issues pending of interest to the nuclear fuel industry, Congress returned to the Capitol January 21 to complete the 102nd Congressional agenda. Congressional priorities this year, while tinged with partisan politics, include jobs, the economy, and passage of the FY 1993 budget. Thus the debate on nuclear legislation must be framed in terms of the above issues in order to be considered by Congress. Since President Bush mentioned his energy strategy in the State of the Union address, there is a chance an energy bill will be approved by Congress as a bill that promotes US employment and helps the economy. Congressional consideration of other issues, such as legislation to move forward DOE's characterization of the Yucca Mountain site for a spent fuel repository or the bill restructuring DOE's uranium enrichment program, may depend on their inclusion in an omnibus energy bill.

Administration-Proposed FY1993 DOE Budget

◇ The President's budget was released on January 29, and the Department of Energy's budget request for FY 1993 reflects the Administration's decision to shift priorities away from defense spending, while living within the previously agreed-to budget guidelines. DOE's total budget request grew two percent from FY 1992, to $19.4 billion. Defense production spending declined, as did civilian energy programs, so that environmental cleanup programs could expand to $5.5 billion, an increase of $1.1 billion from FY 1992. Funding for nuclear energy R&D programs would decrease from last year's $365. 8 million: the request for FY 1993 is only $344.7 million. Although the uranium enrichment program appropriations request grew slightly, the amount spent on actual production of enrichment services declined from $1.214 billion in FY 1992, to $1.174 billion requested for FY 1993. The increased spending would come in the areas of waste management and environmental restoration where the funding request grew to approximately $217 million, almost double that of FY 1992.

The issue of DOE's environmental cleanup, including decontamination and decommissioning (D&D) of the gaseous diffusion plants (GDP), is again addressed in the FY 1993 budget. Still, the question of sharing these costs with the defense programs has yet to be addressed, according to William Young, Assistant Secretary for Nuclear Energy. In the budget proposal, DOE announced it intends to request a millage fee of 0.33/kWh from all civilian nuclear reactors to create a fund of $183 million to offset the costs of the cleanup. The agency will have to introduce separate legislation or promulgate a rule to create this fund from millage fees. Undoubtedly, before the mechanism to collect the fee is established, the utility industry will contest the imposition of another millage fee because they have no ability to control spending from this fund. They will protest, believing the fee to be unfair because it is imposed only on domestic customers of DOE and not on foreign customers, in spite of the fact that historically about a fourth of DOE's enrichment production has been sold internationally.

The Department quietly made another potentially controversial decision in the budget, choosing to request only $100 million for the AVLIS program. The intention is to do no more work on deployment activities, thus limiting the program to the status of a research project and making it even less likely that AVLIS will be built on a commercial scale. If Congress approves DOE's request, the result will be a $63.5 million cut from FY 1992 funding levels.

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Energy Research and Development Subcommittee Hearing On AVLIS

◇ On January 28, Rep. Marilyn Lloyd's subcommittee on Energy Research and Development held a hearing on nuclear energy programs, including the status of AVLIS, at which both Martin Marietta Energy Systems and Lawrence Livermore National Laboratory testified. It was clear both witnesses knew cuts were proposed in the budget, since both pressed their case for increasing the AVLIS budget and moving forward with deployment activities. Dr. James Davis, Associate Director for Lasers at Livermore testified on two funding scenarios: a full-funding case at $191 million and a minimum funding case of $100 million. He said a budget of $100 million would result in "irretrievable loss of key staff and at least a year's delay in deployment if sufficient funding resumes in FY 1994". He said these staff reductions of 40 percent would have to begin in the fourth quarter of FY 1992 and that plant-scale demonstration of the integrated systems would not be possible. He also argued for private sector access to the technology via the Cooperative Research and Development Agreement (CRADA) program, which DOE refuses to authorize because of national security considerations. The subcommittee was sympathetic to the witnesses' requests for more money; however, as the committee is responsible for authorizing but not appropriating money, it remains unclear whether Congress will commit to funding AVLIS deployment.

USCEA Nuclear Fuel Supply Committee Meeting

◇ Over 110 industry representatives attended the USCEA's Nuclear Fuel Supply Committee meeting January 28. At the meeting, an announcement was made that the committee, now called the Nuclear Fuel Supply Forum, will study issues on an ad hoc basis, since previously-existing task forces have been disbanded. An additional new forum, created to discuss nuclear fuel regulatory issues, will interface with NUMARC and will consider issues such as user fees, NRC licensing of fuel cycle facilities, and NRC/EPA regulation of mill tailings.

The first panel of speakers discussed the prospects for Congressional action on legislation restructuring the uranium enrichment program to be administered as a private corporation. Two Congressional committee staffers, one from the House and one from the Senate, confirmed that the issues under debate have now shifted away from consideration of the new corporation's obligation to recover a large "debt" owed by the utilities to DOE. The new issues being debated are the cost and funding mechanism for environmental cleanup and D&D of the GDPs. Another issue that should be considered by the legislature is the fate of AVLIS and whether any entity, without access to this competitive technology after the year 2000, stands a chance of retaining its market share. Both speakers stated that utilities should be prepared to pay a millage fee as the funding mechanism for a D&D fund, unless a viable alternative is proposed to create a guaranteed source of revenue. Further, the staffers expressed doubt about the successful passage of the energy strategy bill.

Ron Stouffer of the General Accounting Office (GAO) described the agency's process for producing a report. The basic mission of the GAO is to perform program evaluations resulting from specific Congressional requests. Currently two reports of relevance to the fuel cycle industry are in process.

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The first, to be completed by April of this year, is a report for Senator Alan Simpson (R-WY) about the effect on the US market of uranium imports from the former Soviet Union. The second is a review of the D&D cost analysis performed by independent contractors and a study of mechanisms for funding D&D. The latter report is considering two specific questions: the fairest method of determining who pays for D&D, and the appropriate users to pay for the cleanup.

The afternoon session focused on trade issues. Daniel Webster, an attorney in private practice, gave a primer on the anti-dumping law. In his opinion, the utilities may participate in the process as "interested parties". Philip Contes of Newman & Holtzinger presented an update on the status of international trade issues. He noted the United States has concluded nuclear cooperation agreements with Hungary, the Czech and Slovak Federal Republic, and Poland, although none of the agreements has entered into force. The need to extend the US-Euratom agreement was also discussed. Finally, Congressional efforts to reauthorize the Export Administration Act (HR 3489 and S 320) were addressed. Although the Senate passed its bill early in 1991, House action was delayed until October. The two bills differ substantially, with the House bill containing many amendments that are objectionable to the Administration. Title III of the House bill, called the Nuclear Proliferation Control Act, requires stringent new standards for exports of nuclear fuel and technology, and provides for sanctions against individuals, companies, and countries that violate safeguards or export control licensing procedures. If Title III were to become law it could cause severe problems for international commercial nuclear fuel trade. As soon as the House appoints its members, a conference committee will convene to address the differences between the House and Senate versions of the bill.

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INDUSTRY BRIEFS

North Korea Signs Safeguards Accord

On January 30, North Korea's Vice Minister of Atomic Energy and Industry signed an International Atomic Energy Agency (IAEA) agreement permitting the IAEA to safeguard all nuclear facilities in the country. The agreement, also signed by IAEA Director General Hans Blix, had been awaited for years. North Korea signed the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) in 1985, but had not followed up its signing with any safeguards agreements. With France recently signing the NPT, China announcing its intent to sign as well, and the US removal of nuclear weapons from South Korea, North Korea finally signed the accord.

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EdF's 55th Reactor Goes Critical

Penly 2, the 1,310 MWe pressurized water reactor operated by Electricité de France, achieved criticality on January 10. EdF's 55th operational reactor is expected to reach commercial operation in June.

San Onofre 1 Likely to Close

Southern California Edison's (SCE) San Onofre 1 reactor likely will be shut down permanently within a year. The 24 year-old reactor will be closed at the end of its current fuel cycle, provided the California Public Utility Commission (CPUC) approves a recent agreement between the reactors' owners, SCE and San Diego Gas & Electric, and CPUC's Division of Ratepayer Advocates.

The 436-MWe (net) PWR will be closed primarily due to economics, as the plant has only a 53 percent lifetime capacity factor and is in need of $125 million in upgrades before its next refueling. The CPUC is expected to approve the agreement.

◆ ◆ ◆

Canadian AECB to Provide Training in Romania

The Atomic Energy Control Board (AECB) of Canada recently signed an agreement with Romania's National Commission for Nuclear Activities Control in which the AECB agreed to train Romanian nuclear regulators. The agreement is part of a larger cooperation effort to reestablish Romania's nuclear program and to complete its Cernavoda nuclear station. Ontario Hydro, Atomic Energy of Canada, Ltd., Nuclear Construction Managers of Montreal, and Italy's Ansaldo SpA are all involved in the effort. Unit 1, a 680-MW CANDU reactor, is about 50 percent complete and is now planned to reach criticality in late 1994.

Japanese Fuel Cycle Companies to Merge

Near the end of January, Japan's two major nuclear fuel cycle firms announced their intent to merge. Japan Nuclear Fuel Industries (JNFI), which handles uranium enrichment and low-level waste management, and Japan Nuclear Fuel Services (JNFS), which handles spent fuel reprocessing, will form an integrated fuel cycle company known as Japan Nuclear Fuel, Ltd. (JNFL) as of July 1.

JNFL will be headquartered in the city of Aomori, the capital of the prefecture in which Japan's major fuel cycle facility at Rokkashomura is located. When this complex is complete, JNFL will operate a 1.5 million SWU-per-year enrichment plant, a 200 thousand cubic meter low-level waste storage facility, and a 800 metric ton-per-year spent-fuel reprocessing center.

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ONTARIO HYDRO

Ontario Hydro is one of the largest electric utilities in North America. Created in 1906, this financially self-sustaining provincial corporation in Ontario, Canada, now operates 81 electricity generating stations with a total installed dependable peak capacity of 31,472 MWe. Hydro delivers power over an extensive transmission and distribution system to 314 municipal utilities, more than 100 large industrial consumers, and over 900 thousand customers in rural and remote areas. The total number of customers served by the utility throughout the province exceeds 3.6 million.

Ontario Hydro is also the largest nuclear utility in Canada, operating 18 nuclear power reactors with capacity totalling almost 13 thousand megawatts electric. Two more reactors are under construction and, when completed by 1993, will add over 1,700 MWe of net nuclear generating capacity. The company is separated into several branches as illustrated in **Figure 1**. The diagram has been simplified to show only the major branches and where nuclear operations fit in the organization. It should be noted that the current organization is effectively subdivided into two components. The planning, finance, and demand management branches report directly to the Chairman and Chief Executive Officer, whereas the design, construction, and operations branches report through the President and Chief Operating Officer.

ELECTRICITY GENERATION

Each year, Ontario Hydro delivers nearly 140 million megawatt-hours of electricity to its customers, with almost half of this power currently provided by Hydro's nuclear power stations. More than one quarter of the utility's total electricity (about 6,400 MWe of installed capacity) is generated by 68 hydroelectric power stations ranging in size from less than one megawatt to 1,200 MWe. Hydro's eight thermal stations (fueled by coal and oil) generate about twenty percent of the total. The balance of electricity supply (about ten percent) comes from electricity purchases made by Hydro, primarily from nearby provincial and US utilities.

Limited availability of acceptable sites for new hydroelectric installations, and environmental concern about the effects of additional fossil-fueled plants, have caused Ontario Hydro to focus on improving and upgrading existing hydroelectric stations. Many of the utility's stations are quite old (one dating back to 1906), so the utility has started a 20-year program to upgrade 33 of the hydroelectric stations. The program includes plans to install new turbines at several stations. Once the designated stations have been modified and upgraded, their total capacity will have been boosted by about 20 percent, and the improvements will permit Hydro to operate the plants for perhaps as much as 80 more years.

Hydro's thermal plants also are being improved, both to increase efficiency and to reduce pollution. Most plants have been switched to low-sulfur coal, and plans are underway to further reduce emissions by installing scrubbers in several stations.

NUCLEAR POWER PROGRAM

Ontario Hydro's first industrial-scale reactor, Pickering 1, reached commercial operation in 1971. Since that time, the utility has brought on line 17 more reactors, the latest of which, Darlington 1, reached full power in December 1991. Hydro's 18 reactors are located at five stations: Pickering A, 4 x 515 MWe; Pickering B, 4 x 516 MWe; Bruce A, 4 x 848 MWe; Bruce B, 4 x 860 MWe; and Darlington, 2 x 881 MWe (**Table 1**). Units 3 and 4 at Darlington are still under construction and are expected to reach commercial operation in 1992 and 1993, respectively.

Hydro's installed nuclear capacity of 12,718 MWe is composed exclusively of CANDU-type heavy water reactors. Developed by Atomic Energy of Canada, Ltd. (AECL) and Ontario Hydro, the CANDU reactor has proven to be one of the safest and most reliable reactor designs. The use of heavy water as a moderator precludes the need for enriched uranium fuel, a factor that makes this design favored in Canada, a country with world-class uranium resources.

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Figure 1
Ontario Hydro Organization

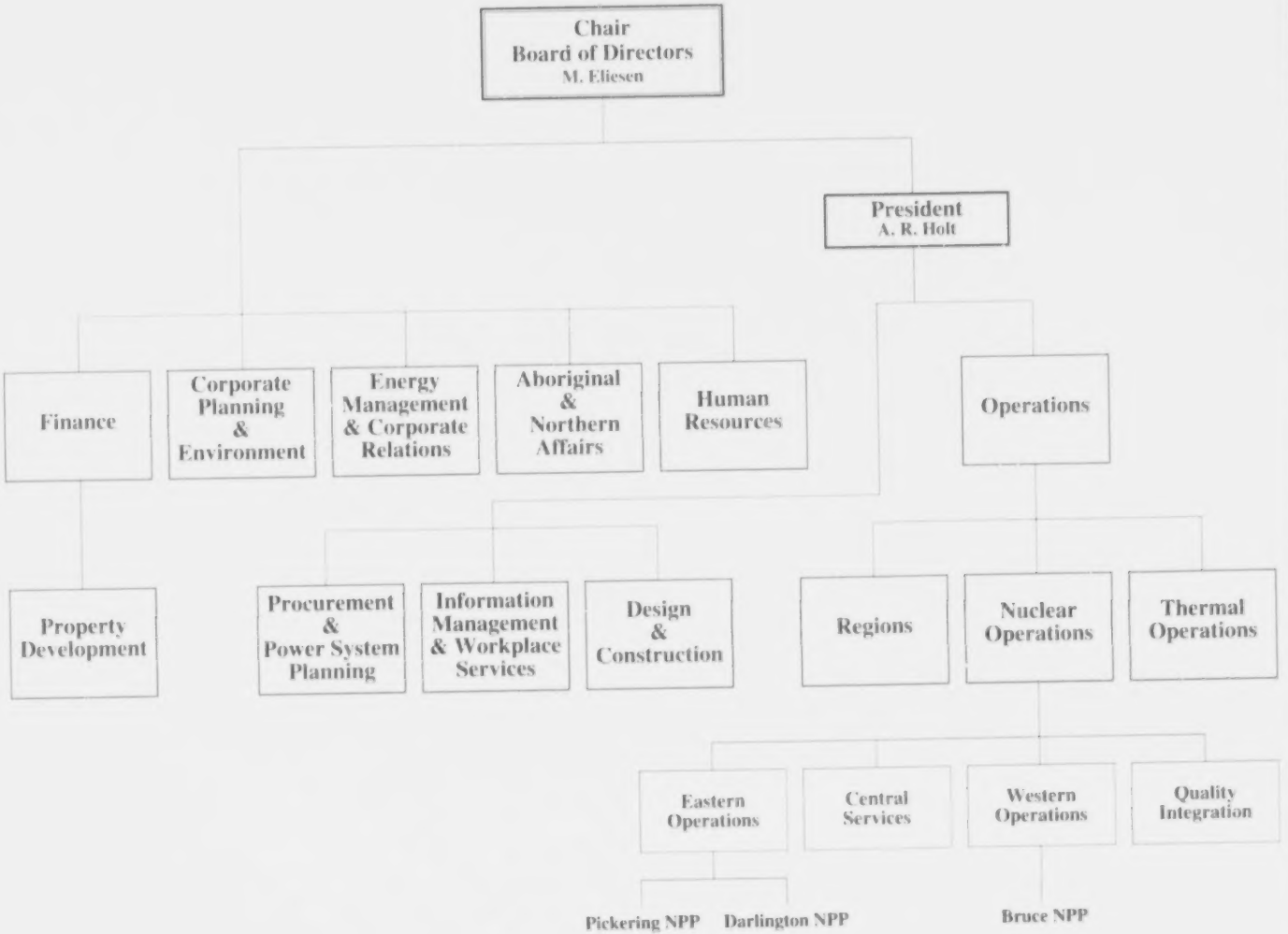

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Table 1
NUCLEAR POWER UNITS OF ONTARIO HYDRO

Units In Operation

Unit	Lead Utility or Fuel Buyer	Capacity (MWe Net)	Type	COD [1]	1990 Capacity Factor (percent)	Total 1990 Electricity Generation (GWh Net)
Bruce 1	Ontario Hydro	848	HWR	1977	30	2,263
Bruce 2	Ontario Hydro	848	HWR	1977	34	2,558
Bruce 3	Ontario Hydro	848	HWR	1978	73	5,399
Bruce 4	Ontario Hydro	848	HWR	1979	48	3,564
Bruce 5	Ontario Hydro	860	HWR	1985	74	5,556
Bruce 6	Ontario Hydro	860	HWR	1984	85	6,235
Bruce 7	Ontario Hydro	860	HWR	1986	89	6,694
Bruce 8	Ontario Hydro	860	HWR	1987	79	5,788
Darlington 1	Ontario Hydro	881	HWR	1992	—	——
Darlington 2	Ontario Hydro	881	HWR	1991	—	1,183
Pickering 1	Ontario Hydro	515	HWR	1971	68	3,053
Pickering 2	Ontario Hydro	515	HWR	1971	65	2,937
Pickering 3	Ontario Hydro	515	HWR	1972	0	0
Pickering 4	Ontario Hydro	515	HWR	1973	24	1,080
Pickering 5	Ontario Hydro	516	HWR	1983	86	3,869
Pickering 6	Ontario Hydro	516	HWR	1984	76	3,455
Pickering 7	Ontario Hydro	516	HWR	1985	77	3,492
Pickering 8	Ontario Hydro	516	HWR	1986	67	3,013
TOTAL		**12,718**		*(1990 Average:*	**62)** [2]	**69,649**

Units Under Construction or Planned

Unit	Lead Utility or Fuel Buyer	Capacity (MWe Net)	Type	COD [1]	Percent Complete [3]
Darlington 3	Ontario Hydro	881	HWR	1992	97
Darlington 4	Ontario Hydro	881	HWR	1993	80
TOTAL		**1,762**			

[1] COD = Commercial Operation Date (actual or expected)
[2] Source: *Ontario Hydro*
[3] Source: *Nuclear News (as of 12-31-91)*

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Historically, Ontario Hydro's reactors have operated very well, several having lifetime capacity factors exceeding 80 percent. Performance gradually declined from an average capacity factor for all reactors of 84 percent in 1983, to 62 percent in 1990. This decline was partly attributable to a few reactors being down for retubing, and reduced performance by those reactors still in need of retubing. However, as Hydro's retubing program is carried out and rehabilitation efforts are completed, capacity factors at those older stations are expected to return to around 80 percent. Pickering units 1, 2, and 3 (**Figure 2**) have all been retubed, and unit 4 is currently shut down until 1993 for the modification. Bruce 1 and 2 are scheduled for retubing beginning in 1994 and 1997, respectively. Also, a program was launched in mid-1991 to rehabilitate Bruce Units 1 through 4 over the next eight years at an estimated cost of C$854 million. The rehabilitation is part of Ontario Hydro's long-term objective to maximize the operating performance of its nuclear plants. As recent output figures illustrate, the efforts are beginning to pay off: the average capacity factors at Hydro's stations climbed to 69 percent for 1991. Only fuel problems at the Darlington station weighed down the total average.

In late 1990, investigation into a refueling problem at Darlington 2 revealed damage to some fuel bundles. Consequently, Unit 2 was shut down in January 1991 for a more detailed examination and analysis of the problem. Unit 1, which had achieved full power in the same month, was shutdown in March 1991 to carry out planned commissioning tests and to await the resolution of the problem in Darlington 2. The cause of the problem proved evasive, and only recently have experts from Ontario Hydro,

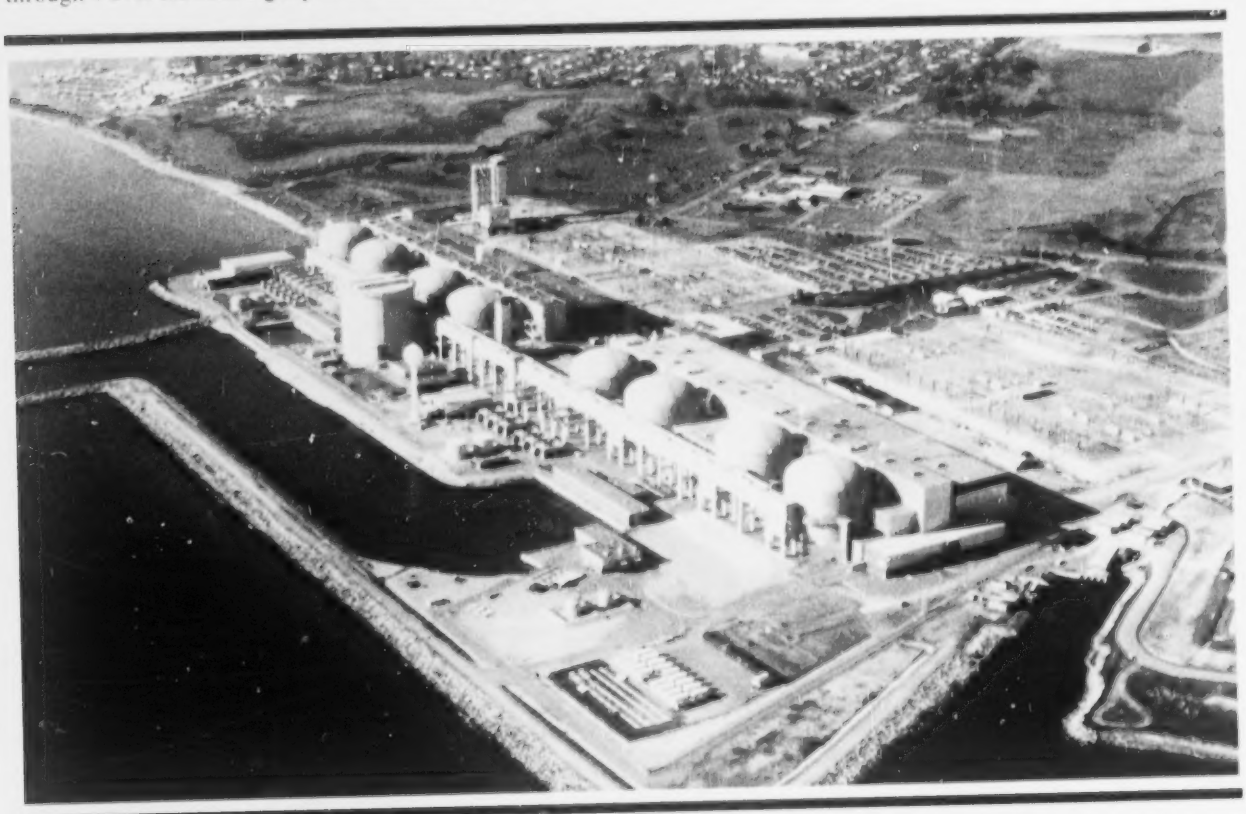

Figure 2 — Pickering Nuclear Power Station consists of eight 515-MWe Candu-Type heavy water reactors, located 30 kilometers east of Toronto.

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AECL, and General Electric Canada been able to tentatively identify the cause. It is believed that with the current configuration of the primary heat transport system in the Darlington reactors, the five-blade impellers in the primary cooling pumps create a resonant frequency that produce vibrations leading to erosion and fatigue damage of the fuel bundles. The engineers believe the problem can be solved, retrofits made, and the unit restarted in the second half of this year. Meanwhile, Darlington 1 was restarted in early December 1991 and reached full power by year end.

FUEL CYCLE SERVICES

Ontario Hydro purchases its uranium fuel domestically through long-term contracts with producers in Ontario and Saskatchewan. The utility's supply from Saskatchewan is extracted from the high-grade Key Lake deposit under agreements with Cameco Corporation and Uranerz Exploration and Mining Ltd. Historically, the majority of Hydro's supply has come from two producers at Elliot Lake, Ontario: Denison Mines, Ltd. and Rio Algom, Ltd.

Due to the high cost of this uranium and because contracts with both companies were approaching a period where they could be cancelled, Hydro notified Denison in April 1991 that it would terminate its supply contract for over three million pounds of uranium per year, effective January 11, 1993. Since Ontario Hydro had become Denison's sole customer for its Elliot Lake production, and Denison subsequently stated its production costs at Elliot Lake were not competitive in the current world market, the company announced the closure of its Elliot Lake operations once deliveries to Ontario Hydro are completed in May 1992. In anticipation of its closing, Denison included undepreciated fixed assets in the cost of its uranium, and asked Hydro to pay C$215.64 per pound U_3O_8 (US$184) for upcoming deliveries. Hydro refused and recently filed a claim with the Ontario courts to clarify its supply agreement with Denison. Hydro has been paying about C$70 per pound (US$60) for Elliot Lake uranium, which over the past ten years represents more than C$1 billion in payments in excess of market price.

During the spring of 1991, Ontario Hydro began to consider cancelling its contract with Rio Algom in order to purchase cheaper uranium elsewhere. However, in June 1991, the newly elected socialist New Democratic Party (NDP) government in Ontario directed Hydro, through an Order-in-Council, to participate in a government program known as the Elliot Lake Regional Economic Development Program. As a result, Ontario Hydro and Rio Algom agreed to revise the termination date of Hydro's long-term contract with Rio Algom. Under an economic obsolescence clause, the utility could have cancelled deliveries after 1993. However, deliveries now will continue through mid-1996, and the quantities will be increased. Hydro will still pay the original contract's cost-plus, above-market price for the 3.7 million pounds equivalent U_3O_8 to be delivered from now to mid-1993. The utility will pay a lower price for an additional 5.9 million pounds above the original contract quantity. Nonetheless, the premium above the anticipated market price for the extra material delivered in the period 1991-1996 will amount to C$160 million, or C$27 per pound U_3O_8 above market price. According to the government directive, Ontario Hydro must pay an additional C$90 million as a contribution to the Elliot Lake economy. The total subsidy amounts to C$250 million.

The reduced level of long-term uranium purchasing from the Elliot Lake region will change the major suppliers to Ontario Hydro. Purchases from Saskatchewan producers will likely increase and potentially become the principal suppliers to Hydro. However, Hydro will seek to broaden its supply base and may diversify its sources to other than Canadian suppliers.

Ontario Hydro has its concentrates refined and converted by Cameco. Cameco's Blind River, Ontario, facility (**Figure 3**) refines the concentrates to UO_3 and transports the material to its Port Hope conversion plant where it is transformed into unenriched, ceramic-grade UO_2 powder for utilization in CANDU reactor fuel. This UO_2 powder is then fabricated into fuel bundles by Ontario Hydro's two fuel manufacturers: General Electric Canada, Ltd. at Peterborough, Ontario, and Zircatec Precision Industries, Inc. at Port Hope. Ontario Hydro's reactors use two different fuel designs: 28-element fuel bundles at the Pickering station, and 37-element bundles at Bruce and Darlington. Hydro has its fabrication supply under contract through 1992.

Heavy water has been produced for Hydro's reactors in the utility's separation plants on the Bruce peninsula. Bruce heavy water plants, HWP-A and -B started up in 1973 and 1979, respectively, and both had a rated capacity of

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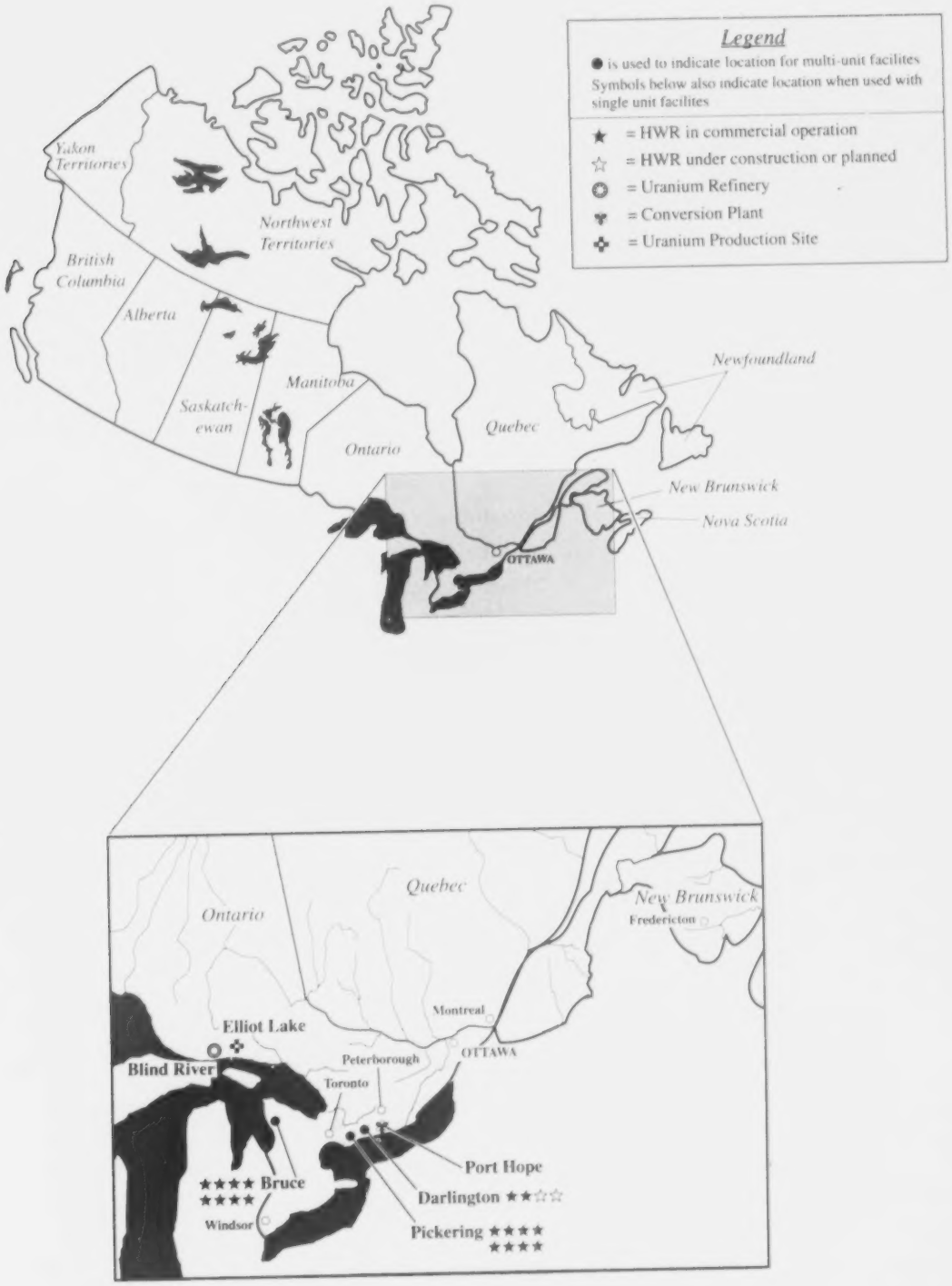
Figure 3
NUCLEAR POWER UNITS AND FUEL CYCLE FACILITIES IN ONTARIO



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700 MT D_2O per year. Bruce HWP-A shut down in the early 1980s, but Bruce HWP-B continues to operate at full capacity. Since, after its initial load, a typical CANDU reactor only requires five metric tons of heavy water per year to replace losses, the capacity at HWP-B is sufficient to meet current needs as well as anticipated future growth. AECL's heavy water plants at Port Hawkebury and Glace Bay once supplied the moderator and coolant to Ontario Hydro, but those plants were shut down in the early 1980s.

Ontario Hydro also has a tritium removal facility at Darlington that began operating in August 1990. The plant can process over 150 thousand gallons of heavy water per month, reducing the moderator's tritium content to 0.5 curies per liter and producing purified tritium, a substance much in demand for fusion research, development, and industrial processes. The tritium extraction process has already led to a reduction in radiation exposure of workers at Hydro's nuclear stations by as much as 36 percent.

Canada does not yet have any permanent spent fuel disposal facility. Officials from AECL Research, the federal government corporation responsible for developing a Canadian deep underground geological repository for high-level nuclear waste, has indicated that it likely will be several years before all the necessary regulatory and environmental approvals have been obtained to permit the long-term disposal of spent nuclear fuel. AECL Research estimates that some twenty years will elapse before an approved facility is designed, sited, and constructed.

As a result, Ontario Hydro has decided to retain its spent fuel on site and has designed a dry storage facility for this purpose. The new storage system uses monitored retrievable storage (MRS) technology, and Hydro already has begun marketing the system to other countries and individual utilities worldwide. On-site dry storage facilities are particularly attractive for Ontario Hydro because the CANDU fuel bundles are compact, have low burnup, and relatively small residual heat compared to light water reactors' enriched fuel. In January 1992, Hydro's Board of Directors approved a C$60 million expenditure for the first phase of the dry-storage project where 6,200 metric tons of spent fuel from Hydro's Pickering reactors will be stored during the period 1994-2007. A later, second phase could handle an additional 7,000 MT while a national disposal facility is being established.

THE NDP AND ONTARIO HYDRO'S DEMAND/SUPPLY PLAN

On September 6, 1990, the socialist New Democratic Party surprised many observers by winning the majority of seats in Ontario's provincial election. The NDP, led by Premier Bob Rae, had long espoused a strong anti-nuclear platform and began to exercise its influence soon after it took office. One of the NDP's first moves was to place a moratorium on construction of any new nuclear facilities, although construction on the Darlington nuclear station was allowed to continue. The declared moratorium also stopped advanced reactor research and cancelled engineering and development work on Hydro's long-term reactor plans.

Table 2
1989 ONTARIO HYDRO DEMAND/SUPPLY PLAN[1]
(Data for Median Demand Growth-GWe)

	January of:			
	1999	2004	2009	2014
Basic Load Forecast	30.2	34.5	37.0	39.8
Demand Management	3.4	4.5	5.2	5.9
Firm Load Forecast	26.8	30.0	31.8	33.9
Load Meeting Capability				
Existing System	25.5	25.0	22.8	18.5
Purchases	0.2	0.8	0.8	0.8
Hydroelectric	0.9	1.5	1.8	2.2
Non-Utility Generation	0.6	0.9	1.1	1.2
Load Meeting Capability w/o Major Additions	27.2	28.2	26.5	22.7
Required Major Additions to Load Meeting Capability[2]	0	1.8	5.3	11.2

[1] Source: Figure ES-1 of the 1989 Demand/Supply Plan [extracted from *Unecan News*, vol. 2, no. 1, January 31, 1992, p.2]

[2] The generating capacity additions must exceed load meeting capability requirements by 24 percent in order to maintain Ontario Hydro's reserve margin.

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In mid-1991, Premier Rae named Marc Eliesen as Chairman and Chief Executive Officer of Ontario Hydro. Mr. Eliesen had been Ontario's Deputy Minister of Energy and was Chairman of Manitoba Hydro when the NDP was in power in that province. Mr. Eliesen has been a long-time NDP supporter and maintains a neutral stance on the nuclear issue.

At the end of 1989, prior to the election of the NDP, Ontario Hydro completed its 25-year Demand/Supply Plan for meeting the electricity needs of the province through the year 2014. The original plan called for conservation and efficiency improvements totalling 5,500 MWe, new hydroelectric facilities and natural gas-fired plants, increased purchases from non-utility generators (independent power producers) and from neighboring Canadian and US utilities, and a substantial increase of installed nuclear generating capacity. Hydro's plans called for ten additional 881-MWe (net) CANDU reactors at three stations by 2014. These proposals were based on a conservative demand growth estimate of 2.2 percent per year, and an expectation that more than 8,500 MWe of fossil and nuclear generating capacity would have to be retired by 2014 due to obsolescence. **Table 2** gives the basic forecast data of the original plan.

The plan was submitted to Ontario's majority Liberal government in December 1989 for approval. The government appointed a three-person Environmental Assessment Board (EAB) to assess the plan. A funding subpanel was established by the EAB in 1990 to consider intervenors' requests for financial support from Ontario Hydro. The outcome was that Hydro was directed to provide C$23 million to intervenor groups, most of whom will use the money to fund challenges to Hydro's long-term energy plans.

The first formal hearing of the EAB took place in April 1991. For the past nine months, the Board has been engaged in the early stages of an investigation that had been expected to extend for another two to three years. However, the scope of the hearings has been modified significantly (**Table 3**) following the presentation by Hydro to the EAB on January 15, 1992, of a revised plan, referred to as the 1992 Update. The updated plan will forego the commitment to any new fossil or nuclear generating plants until after the turn of the century, and instead, will rely upon independent power producers, conservation, and other demand-side management measures to meet reduced forecast load growth.

Specifics of the amended plan include doubling the spending on demand-side management to C$6 billion over ten years, doubling purchases of power generated by private producers, and continuing the earlier intention to build a C$2 billion transmission line to import as much as 1,000 MWe of hydroelectric power from Manitoba. A comparison of the two plans is shown in **Table 4**. The original expansion plans calling for the ten new reactors has been deferred (**Table 5**); plans to build new nuclear or fossil-fueled capacity will be reconsidered later for possible operation in 2009.

Table 3
APPROVALS REQUESTED FROM ONTARIO ENVIRONMENTAL ASSESSMENT BOARD

1992 Updated Plan:

a) **1,000 MW** power transmission line from Manitoba
b) **up to 1,800 MW** of additional hydroelectric capacity

1989 Original Plan:

a) **1,000 MW** power transmission line from Manitoba
b) **2,010 MW** of additional hydroelectric capacity
c) **1,344 MW**:two combustion turbine units (CTU) at 672 MW each
d) **2,016 MW** capacity through CTU/IGCC units (Integrated Gasification Combined Cycle)
e) **1,008 MW** natural gas or oil CTU/CC.
f) **3,534 MWe**-CANDU A reactors } (equivalent of two, four-unit stations)
g) **3,524 MWe**-CANDU B reactors }

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Table 4
ONTARIO HYDRO 25-YEAR DEMAND/SUPPLY PLAN

Original Plan (released December 1989)	Updated Plan (released January 1992)
• Demand growth estimates yielded the need for over 11.2 GWe of additional generating capacity by 2014.	• Demand forecasts were reduced during the mid- to late 1990s, thereby cutting new capacity requirements to only 0.2 GWe.
• This plan forecast the need for ten additional 881-MWe CANDU heavy water reactors at three stations by 2014.	• Plans for construction of new nuclear plants were eliminated; any decision about when or if to build additional nuclear capacity was deferred until after the turn of century.
• The hydroelectric portion of the plan called for over 2,800 MWe of additional capacity at as many as 18 sites, including new installations, redevelopments, and extensions.	• Hydroelectric additions were cut by more than 1,000 MW. Plans for six new installations and two extensions have been suspended, resulting in reduced capacity additions of up to 1,800 MW.
• The original plan called for numerous fossil-fueled plants totalling almost 5,400 MW of capacity additions. The plants included coal, gas, and oil-fired combustion turbine units, with most intended as combined cycle or integrated gasification plants.	• The update cut all plans for new fossil-fueled units. It deferred 4,300 MW of new supply beyond 2014, and will rely upon reduced demand, hydroelectric additions, and plant life extensions to meet forecasts.
• The 1989 forecast determined that over 8,600 MW of capacity would need to be retired before 2014.	• The 1992 update required fewer plant retirements, now totalling only 4,400 MW. Life extensions are planned for some fossil-fueled plants, but not for any nuclear plants.
• Demand management was projected to save over 5,500 MW of capacity by 2014.	• The new plan would rely upon demand management to save nearly 9,900 MW of capacity. Of this, almost 4,000 MW would be "saved" through fuel switching.* The budget for demand management of the updated plan would be doubled, to C$6 billion over ten years.
• To access additional power, a power transmission line to import 1,000 MW per year from Manitoba would be installed by the year 2000.	• The Update retained this portion of the plan to install a new transmission line to import power from Manitoba.
• Over 2,100 MW of power would be purchased from Non-Utility Generators (NUG).	• The revised plan outlined very rapid growth of non-utility generators. Thus, the utility will rely on NUGs for purchases of 4,200 MW.
• It took five years to prepare the original plan and to carefully analyze and review every scenario such that a high degree of confidence could be placed on the forecasts.	• The updated plan mandated by the NDP was compiled in less than one year to reflect NDP policies. Many events could significantly affect the new forecasts, so progress on demand management and other factors must be watched carefully and reacted to quickly to avoid possible supply shortages.

* Fuel switching is being encouraged by Ontario Hydro as a policy to save electricity. The procedure would provide financial incentives to consumers to switch to other forms of energy; for example, from electric heat to gas heat. In order for this policy to be implemented legally, the Power Corporation Act must be amended and those amendments approved by the legislature. This issue has become very political and much opposition to the proposed amendments exists in the Ontario legislature. However, since the NDP has a majority of seats, the passage of the new legislation seems likely.

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Table 5
COMPARISON OF 1989 PLAN AND 1992 UPDATE CAPACITY TARGETS FOR 2014
(Megawatts electric)

	Original 1989 Plan		1992 Update	
	Additional Required	To Be Retired	Additional Required	To Be Retired
Demand Management	5,570	—	9,860*	—
Non-Utility Generators	2,120	—	4,200	—
Manitoba Purchase	1,000	—	1,000	—
Hydroelectric	2,849	—	up to 1,800	—
Fossil Fuels	5,376	6,654	[6,000 combined]	2,366
Nuclear	8,810	2,060		2,060
Total	**25,725**	**8,714**	**22,860**	**4,426**

* Nearly 4,000 MW of this gain is expected through fuel switching.

OUTLOOK

The policies of the NDP government have dramatically changed the outlook for Ontario Hydro. Original plans had nuclear power eventually generating well over half of all electricity supply for the province. Instead, no new plants are being considered once the Darlington station is completed, and electricity needs will be met by reducing demand, not increasing supply. As Premier Bob Rae stated, "Frankly, the next few years are going to be the test as to whether we can get the demand forecasts down."

This cutback in new construction requirements has led Ontario Hydro and its reactor supplier, AECL, to look internationally for other opportunities. Both have found success, as AECL is supplying systems and technical expertise to South Korea as Korea Electric Power Corporation builds a second CANDU unit at Wolsong and has requested offers for the supply of units 3 and 4. Ontario Hydro has been successful in developing cooperation agreements and providing training to Romania, which is in the process of completing four heavy water, CANDU-type reactors at Cernavoda. Hydro and AECL also have signed an agreement in Hungary to examine the feasibility of building four CANDU reactors at the Paks station. These successes and a concerted effort with Canada's federal government to develop other international opportunities will provide business to Ontario Hydro while it works domestically to manage demand growth.

Many doubt that demand management can realistically outpace demand growth. Numerous groups in Ontario, typified by the Association of Major Power Consumers, have expressed outrage at the NDP's ideological power policies, labeling them "short-term political thinking" and "a tragedy for Ontario."

Ontario Hydro was established by the Power Corporation Act, which mandates that Hydro provide power at cost to all customers. Several changes to the Act are required in order for the new updated demand/supply plan favored by the NDP to be legally enacted and legitimately pursued. This process is the next step for the new plan, in what has become a tangled political debate. Several municipal utilities, major power customers, the nuclear industry, and labor leaders recently testified before a legislative committee considering proposed amendments to the Act incorporating the new NDP policies. The groups all contended that the suggested new legislation was unwise, unrealistic, and not based on economic facts.

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Even if the NDP is voted out of power in the next election expected in 1995, or if the party realizes that demand is growing faster than conservation efforts to reduce it and thus modifies its policies, Ontario Hydro will have lost several crucial years that could have been spent planning for additional capacity. Higher-than-expected demand can consume overcapacity in only a few years, and a shortfall of generating capacity is intolerable to customers suffering blackouts or brownouts. And, without new plants under construction, it can take a decade or more to return to a position of having surplus economic generating capacity. Clearly, Ontario Hydro has challenges facing it, but the utility has demonstrated through past performance it can overcome its obstacles and will remain one of the important nuclear utilities of the world.

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EURATOM IN A NEW EUROPE

As the European Community (EC) approaches its thirty-fifth anniversary, it faces new challenges in opening markets to competition during a period of recession in the West. The degree to which the EC emphasizes protectionism rather than open competition in world markets will have a profound effect on international trade.

In the nuclear fuel market, the EC faces a dilemma as the new nations of the former Soviet Union seek markets in the West for those few products they can sell profitably, while some EC producers seek protection for their existing customer base. The EURATOM Supply Agency, which was established to ensure the equitable and reliable supply of nuclear fuel within the EC, is struggling to address this issue while Europe is rapidly changing.

Treaty Background

Three treaties were signed establishing the European Communities, the first in Paris on April 18, 1951, and the other two in Rome on March 5, 1957. The European Coal and Steel Community, the original union of Belgium, France, West Germany, Italy, Luxembourg, and the Netherlands, preceded the European Economic Community (EEC) and the European Atomic Energy Community (EURATOM) by six years. All of the treaties have the same member states as signatories; thus the three communities are commonly referred to singularly as the EC. The size of the EC has doubled since 1957, and there are now twelve Member States: Belgium, Denmark, France, Germany, Great Britain, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, and Spain.

Article 1 of the EURATOM Treaty states that each Member State shall

> ...contribute to the raising of the standard of living in the Member States and to the development of relations with the other countries by creating the conditions necessary for the speedy establishment and growth of nuclear industries.

The EC government, headquartered in Brussels, Belgium, is then charged under Article 2 to do the following:

(a) promote research and ensure the dissemination of technical information;

(b) establish uniform safety standards to protect the health of workers and of the general public and ensure that they are applied;

(c) facilitate investment and ensure, particularly by encouraging ventures on the part of undertakings, the establishment of the basic installations necessary for the development of nuclear energy in the EC;

(d) ensure that all users in the EC receive a regular and equitable supply of ores and nuclear fuels;

(e) make certain, by appropriate supervision, that nuclear materials are not diverted to purposes other than those for which they are intended;

(f) exercise the right of ownership conferred upon it with respect to special fissile materials;

(g) ensure wide commercial outlets and access to the best technical facilities by the creation of a common market in specialized materials and equipment, by the free movement of capital for investment in the field of nuclear energy and by freedom of employment for specialists within the EC;

(h) establish with other countries and international organizations such relationships as will foster progress in the peaceful uses of nuclear energy.

The problem of nuclear fuel supply is addressed in detail in Chapter VI of the Treaty, entitled "Supplies." Article 52, item 2.b of the chapter provides for the creation of the EURATOM Supply Agency:

> An Agency is hereby established; it shall have a right of option on ores, source materials and special fissile materials produced in the territory of Member States and an exclusive right to conclude contracts relating to the supply of ores, source materials and special fissile materials coming from inside the EC or from outside.

Customarily, the Supply Agency's exclusive right to conclude contracts is maintained through provision

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of a clause in contracts which reads, "This Agreement is concluded with the concurrence of the EURATOM Supply Agency," and is followed by the signature of an Agency official. The Agency's involvement in the contract normally does not extend past providing such concurrence.

Since the emergence of the commercial uranium market in the 1970s, the Supply Agency is not known to have exercised its "option" on nuclear fuel of Community origin (presumably to buy or sell it), nor has it influenced the distribution of supplies among EC companies to any notable degree. An unusual situation does exist in the relationship between EURATOM and the US Department of Energy (DOE). The Supply Agency is the contract holder and administrator of all EC nuclear fuel business with DOE, which means that notices to and from EC companies pass through Brussels *en route* to and from DOE. The Agency has controlled the disposition within the Community of some quantities of DOE-origin, high-enriched uranium (HEU), as supplies of HEU are relatively scarce.

Although the Agency has not intervened to buy or sell, it has closely monitored proposed exports of Community-origin uranium and enrichment services, particularly in recent years. By contrast, it has shown little concern with exports of, for example, US or Soviet-origin materials from the EC. The Agency's apparent objective in discriminating on the basis of origin has been to ensure that EC consumers receive priority for the acquisition of Community-origin materials, thereby keeping EC products within the EC whenever possible.

As noted above in Article 2.d, the Agency is also charged under the Treaty with ensuring that EC consumers receive a regular and equitable fuel supply. In 1957, when the Treaty was signed and uranium was believed to be relatively scarce, the signatories intended that the Agency would protect EC consumers against discrimination in the distribution of nuclear fuel. As uranium is known today to be relatively abundant, the fears of the Treaty signatories have been shown to be unfounded, and one of the main purposes for establishing the Agency could be considered obsolete. The Agency now appears to interpret its mission as the preservation of a diverse supply base for the Community and the assurance of prices that are considered equitable or fair to EC producers.

Role of Politics

To better define its mission, the Agency has looked to the European Commission for direction. The Commission is the executive body of the EC, composed of seventeen commissioners appointed by the Member States, two each from the five largest Member States and one each from the seven remaining members. Each commissioner has the responsibility for a separate portfolio or set of portfolios, such as Energy or Agriculture. Reporting directly to the commissioners are twenty-two director generals, who are the most senior civil servants in the EC bureaucracy. Most of the director-generalships in the EC are comparable to ministries in a Member State government and, in that sense, the EURATOM Supply Agency is unique; with a staff of about twenty-five persons, it is the smallest administrative unit in the EC bureaucracy to have a director-generalship.

The Director General of the EURATOM Supply Agency is Michael Goppel of Germany. He reports directly to the commissioner for Energy, Antonio Cardoso e Cunha of Portugal. Both Mr. Cardoso and Mr. Goppel assumed their positions January 1, 1989. Under Mr. Goppel, the senior administrator of the Agency is Jean-Claude Blanquart from France. An advisory committee, comprised of officials from EC companies active in the nuclear fuel market, assists the Supply Agency on a consultative basis.

As the European Commission is a political body, and the Supply Agency is closely connected to the European Commission, the Agency's practices may be heavily influenced by EC politics at any point in time.

The influence of politics has been particularly notable in recent years. During most of the 1980s, the nuclear fuel industry largely perceived the Agency as an administrative office that registered contracts and maintained relations with some outside governments, particularly Australia, Canada, and the USA. In 1988, however, the Agency had a direct commercial impact when it reviewed the practice of swapping safeguards obligations on equivalent quantities of uranium at different locations (flag swapping). Flag swaps had previously been conducted routinely by the EURATOM Safeguards Directorate in Luxembourg at the request of EC companies.

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The Agency's actions inhibiting flag swaps, as well as a related *de facto* policy restricting material swaps of Southern African uranium, caused it to be viewed as obstructive by some EC companies. Flag swaps promote the fungibility of uranium within the EC's internal market, and are therefore a mechanism the Agency theoretically should support.

The Agency attributes the 1988 policy restricting swaps to directives from the Commission. The commissioner for Energy at that time, Nicolas Mosar of Luxembourg, apparently faced a barrage of questions from members of the European Parliament after the publication in the German news magazine *Der Spiegel* of allegations that the Supply Agency had acted wrongly in consenting to flag swaps and allowing free trade in South African uranium. The Commission denied the press allegations, but the Agency was affected by the political fallout. After meetings with Mr. Mosar and officials of the director-generalship for Energy (DG17), the Agency changed its guidelines for swaps and for contract review in general.

During 1989, the discussion about flag swaps and swaps involving South African and Namibian uranium subsided, and a far-reaching discussion arose about EC trade policy in general. After the dramatic revolutions in eastern Europe began in 1989, that discussion intensified.

Most of the countries of eastern Europe and the former Soviet Union aspire to have close commercial ties with the EC, and many of them are major suppliers of nuclear fuel. However, EC companies that fear a loss of market share from increased deliveries of non-EC nuclear fuel to EC end-users have sought protection from imports. In return, commissioners have asked the Agency and DG17 to consider the situation of the EC producers of uranium, conversion, and enrichment.

Diversity of Supplies

The Supply Agency publishes an Annual Report containing statistics on the number and type of contracts concluded by the Agency and other information about supplies of uranium, conversion, and enrichment to and from the EC in the previous calendar year. The Agency's Annual Report for 1990 includes the following statement:

During 1990, as in previous years, the front-end of the nuclear fuel cycle in the European Communities has continued to operate satisfactorily.

A well diversified supply of nuclear materials and services was readily available. Ongoing supply under existing contracts did not pose any particular problems and increasing favorable terms have been obtained by buyers in newly concluded contracts...The EC is...dependent on external supplies of natural uranium for some three quarters of its requirements...1990 saw the first significant acquisitions of Soviet origin natural uranium by EC utilities—around nine percent of the EC's 1990 requirements—much in the form of UF_6. Consequently, besides being a displacement from the EC's traditional natural uranium supply sources, such transactions have resulted in an associated loss of business for the EC's conversion industries.

Regarding enrichment services, the Report further stated:

Although the potential availability of substantial quantities of low-priced separative work from the Soviet Union continued to be widely published, purchases from this source during 1990 by EC entities were negligible. Transactions centered rather on enriched uranium product held in excess utility and government inventories. A significant proportion of the material thus traded was subsequently exported.

In keeping with the Agency's policy of confidentiality, the Report should not normally provide statistics on the origins of material or the quantities delivered to particular Member States or companies, although there is a specific reference in the Report to Soviet-origin supplies. The Supply Agency does monitor the quantities of material imported from various supplier nations. Furthermore, persons within the Agency may have particular views as to the proper balance of supply sources for the EC, although no *official* target limits have been declared or published. The determination of acceptable "reasonable limits", or quotas, of fuel from a particular non-EC source is clearly a subjective process. Thus, while Canadian uranium may have accounted for nearly thirty percent of total EC uranium supply in certain past years without any apparent concern in Brussels, imports from the former Soviet Union equivalent to nine percent in 1990 warranted a cautionary

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note in the Agency's Report. Similarly, while SWU deliveries to the EC from the USDOE accounted for more than half of EC deliveries in the 1970s, the threat of an increase in imports from the former Soviet Union —currently around ten percent of EC supplies—also warranted a concerned commentary in the Agency's Report.

In view of the Agency's commitment to ensuring a diverse supply base for the Community, its reaction to the growth in market share of a new supplier seems inconsistent. However, the response might be explained by examining the second element of the Agency's perceived mission—the assurance of prices that are considered equitable or fair to EC producers. Although the quantity of material imported from the former Soviet Union has been relatively small, many EC producers have been unable or unwilling to compete at current world market levels for several years. If EC suppliers were competing effectively with suppliers from the former Soviet Union, the Agency's reaction might have been different.

EC-USSR Trade Treaty

On December 17, 1989, the EC signed a treaty with the Soviet Union on trade, and commercial and economic cooperation. The Trade Treaty covers trade in all goods, except textiles, coal, and steel. The Treaty contains a statement in Article 7 that is indicative of the character of the agreement:

> ...each Contracting Party shall accord the highest possible degree of liberalization to imports of the other's products.

While the intent of the Trade Treaty is clear, the Supply Agency has called attention to Article 14, which reads:

> Goods shall be treated between the Contracting Parties at market-related prices.

Outside of Article 14, there is no other use or definition in the Trade Treaty of the term "market-related prices". The Agency has recently declined to sign several agreements involving supplies originating in the former Soviet Union because of uncertainty about the meaning of "market-related prices." While most companies worldwide would agree that "market-related prices" refers to competitive prices available on a world market governed by supply and demand, the Agency has suggested that the term may be better defined as the *cost of production* using Western methods of evaluation. This suggestion would seem to contradict Article 67 of the EURATOM Treaty, which reads:

> Save where exceptions are provided in this Treaty, prices shall be determined *as a result of balancing supply against demand** as provided in Article 60; the national regulations of the Member States shall not contravene such provisions. [Article 60 addresses the requirement for users and producers in Member States to report their nuclear fuel demand and supply, respectively.]
>
> * authors' emphasis

To settle the debate, the Agency has convened officials from several EC companies, including producers, converters, enrichers, and utilities, to recommend a suitable interpretation for "market-related prices". The committees formed by these officials are expected to render an interpretation within the next few months.

The Agency's reluctance to approve new contracts involving deliveries from the former Soviet Union, even if temporary, corresponds in time with the anti-dumping proceedings against Soviet nuclear fuel imports in the USA. It is well known that several of the US producers funding the anti-dumping case in the USA are owned in whole or in part by EC producers.

Interestingly, the Treaty establishing the European Economic Community does have a provision pertaining to dumping in Part III, Title 1, Chapter 1, Section 2, Article 91, which reads as follows:

> *1.* If,...the Commission, on application by a Member State or by any other interested party, finds that dumping is being practiced within the common market, it shall address recommendations to the persons with whom such practices originate for the purpose of putting an end to them.
>
> Should the practices continue, the Commission shall authorize the injured Member State to take protective measures, the conditions and details of which the Commission shall determine.

It is not clear that the clause is intended to apply to external trading nations. As yet, no Member State is known to have applied for a dumping investigation, nor has such a charge been addressed to any of the newly independent states within the former Soviet Union.

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Adapting to a New Europe

Ultimately, the decision within the EC whether to uphold restrictions against imports from the former Soviet Union will depend on Community politics. There is reason to believe that the Supply Agency's apparent stance against these newly independent states will not be sustained. After all, the production industries form only part of the European Community's nuclear fuel interests. Many EC utilities have become frustrated by the Agency's decision not to sign certain contracts, and by the effectiveness of the producers' solicitations. The consumers' views will eventually be heard.

Furthermore, the EC has a strong interest in helping, rather than hindering, the industries of eastern Europe and the former Soviet Union. Those emerging nations share a continent and heritage with the Member States of the EC, but they are vastly disadvantaged economically. Assisting them is the only means to create a peaceful new order in Europe.

James J. Lightner
Alan L. Wolcott

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CALENDAR

NUCLEAR INDUSTRY CALENDAR

1992

Feb. 23-25 ***INFO Centers Workshop*** (Marriott Hotel, Palm Beach Gardens, Florida).
Sponsored by the U.S. Council for Energy Awareness.
Contact: USCEA Conference Office; 202-293-0770; Telex: 7108249602; Fax: 202-785-4113.

March 22-25 ***Fuel Cycle Conference '92*** (OMNI Charleston Hotel, Charleston, South Carolina).
Sponsored by the U.S. Council for Energy Awareness.
Contact: USCEA Conference Office; 202-293-0770; Telex: 7108249602; Fax: 202-785-4113.

April 8-10 ***Research and Development in the Nuclear Industry*** (Peterhouse, University of Cambridge, England).
Sponsored by the Institution of Nuclear Engineers and the British Nuclear Forum.
Contact: Ms. Ipek Yigit, Manager for Public and Industrial Affairs, British Nuclear Forum; phone: 071-828-0116; Fax: 071-828-0110; Address: 22 Buckingham Gate, London, SW1E 6LB, England.

April 8-10 ***25th Japan Atomic Industrial Forum Conference*** (Pacifico Yokohama, Yokohama, Japan).
Contact: Department of Planning and International Affairs, Japan Atomic Industrial Forum, Inc.; 81-3-3508-2411; Fax: 81-3-3508-2094; Address: 1-1-13 Shimbashi, Minato-ku, Tokyo 105, Japan.

April 12-16 ***8th Pacific Basin Conference*** (Taipei, Taiwan).
Sponsored by the Amercian Nuclear Society.
Contact: ANS Meetings Department; 708-352-6611.

April 26-28 ***INFO '92 Conference*** (OMNI Charlotte Hotel, Charlotte, North Carolina).
Sponsored by the U.S. Council for Energy Awareness.
Contact: USCEA Conference Office; 202-293-0770; Telex: 7108249602; Fax: 202-785-4113.

May 5-7 ***Annual Meeting on Nuclear Technology '92*** (City Conference Hall, Karlsruhe, Germany).
Sponsored by the German Nuclear Society and the German Atomic Forum.
Contact: Congress Office JK'92; INFORUM GmbH, Heussallee 10, W-5300 Bonn 1; Phone: 0228-507-223.

May 15-17 ***19th Annual Meeting & Int'l Conference on Nuclear Energy*** (Hotel Diplomat, Prague, Czech.).
Sponsored by World Nuclear Fuel Market.
Contact: Donna Cason; 404-447-1144; Fax: 404-447-1797.

June 7-11 ***American Nuclear Society Annual Meeting*** (Boston Marriott, Copley Place, Boston, Massachusetts).
Contact: ANS Meetings Department; 708-352-6611.

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1992
(continued)

Sept. 9-11 ***Uranium Institute Seventeenth Annual Symposium*** (London, United Kingdom).
Contact: 44-71-225-0303; Fax: 44-71-225-0308.

Sept. 20-23 ***International Uranium Seminar '92*** (Hyatt Regency Hotel, Lake Tahoe, Nevada).
Sponsored by the U.S. Council for Energy Awareness.
Contact: USCEA Conference Office; 202-293-0770; Telex: 7108249602; Fax: 202-785-4113.

Sept. 21-23 ***Second International Conference on Training for Operation & Maintenance in the Nuclear Industry***
(The Moat House International Hotel, Stratford-upon-Avon, United Kingdom).
Sponsored by the Institution of Nuclear Engineers.
Contact: INE Conference Secretary; 081-698-1500 or 081-698-4750; Fax: 018-695-6409.

Sept. 29-Oct. 1 ***Crisis/Emergency Information Planners' Workshop*** (Loews L'Enfant Plaza, Washington DC)
Sponsored by the U.S. Council for Energy Awareness.
Contact: USCEA Conference Office; 202-293-0770; Telex: 7108249602; Fax: 202-785-4113.

Oct. 18-22 ***AMC Mining Convention*** (Las Vegas, Nevada)
Sponsored by the American Mining Congress
Contact: AMC Convention Office; 202-861-2800; Fax: 202-861-7535.

Oct. 19-23 ***International Symposium on Geological Disposal of Spent Fuel, High-level and Alpha-bearing Wastes***
(Antwerp, Belgium).
Sponsored by the International Atomic Energy Agency.
Contact: IAEA, P.O. Box 100, A-1400 Vienna, Austria.

Nov. 15-18 ***Nuclear Energy Forum*** (Fairmont Hotel, Chicago, Illinois).
Sponsored by the U.S. Council for Energy Awareness.
Contact: USCEA Conference Office; 202-293-0770; Telex: 7108249602; Fax: 202-785-4113.

Nov. 15-20 ***American Nuclear Society Winter Meeting*** (McCormick Center Hotel, Chicago, Illinois)
Contact: ANS Meetings Department; 708-352-6611.

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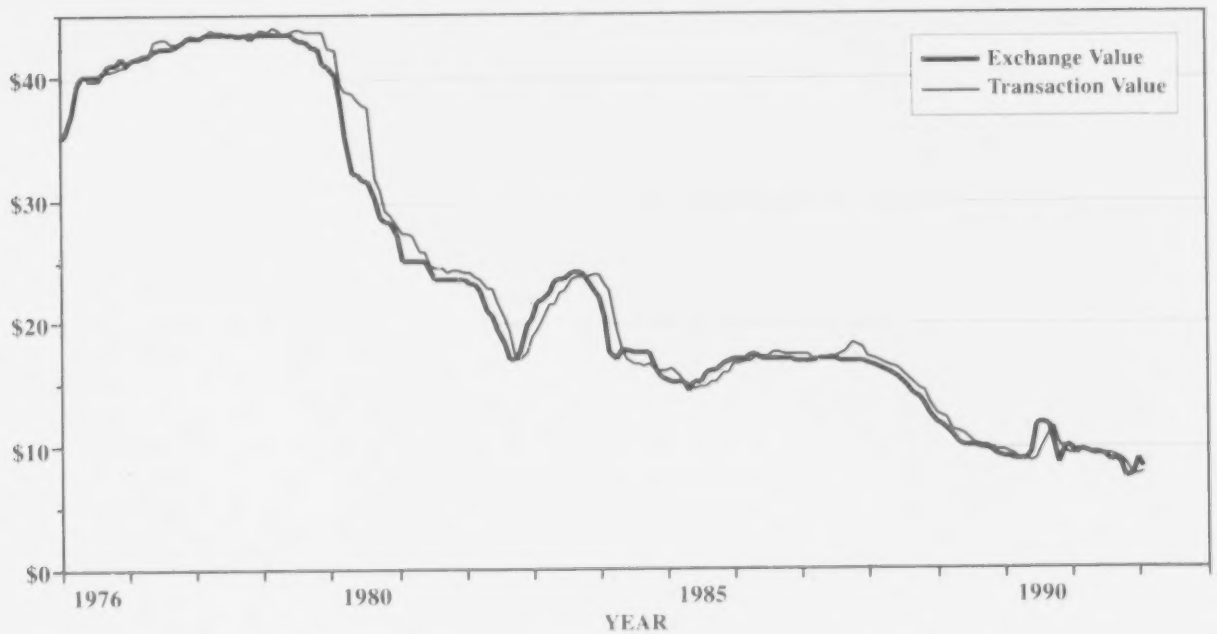
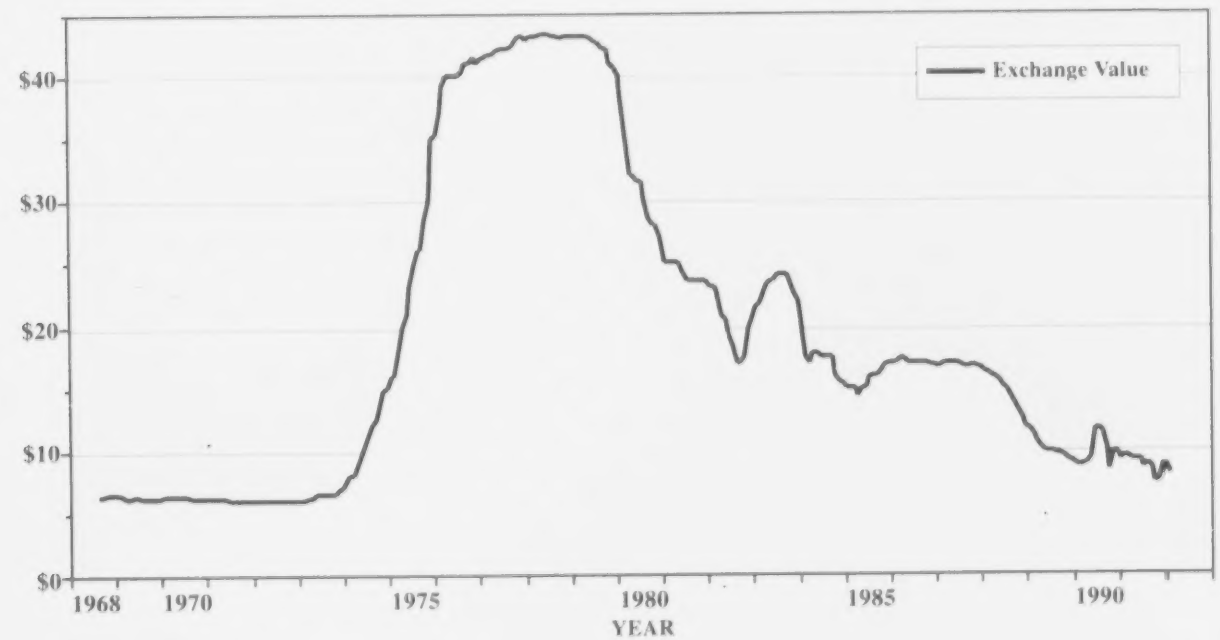
NUEXCO HISTORICAL EXCHANGE VALUE AND TRANSACTION VALUE

(in US dollars per pound U_3O_8)





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HISTORICAL MARKET VALUES

Exchange Values

Year	Determined as of the last day of the month indicated ($US/lb U3O8)											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1968	—	—	—	—	—	—	—	6.35	6.35	6.40	6.45	6.50
1969	—	6.35	6.10	6.10	6.25	6.25	6.20	6.20	6.15	6.15	6.15	6.20
1970	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.20	6.15	6.15	6.15	6.15
1971	6.20	6.20	6.20	6.20	6.15	6.05	6.00	5.95	5.95	5.95	5.95	5.95
1972	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95
1973	5.95	6.00	6.10	6.20	6.45	6.50	6.50	6.50	6.50	6.50	6.75	7.00
1974	7.70	7.90	8.00	9.00	9.50	10.50	11.50	12.00	12.50	14.00	14.75	15.00
1975	16.00	16.00	18.00	20.00	21.00	23.00	24.70	26.00	26.00	28.50	30.00	35.00
1976	35.20	37.00	39.25	40.00	40.00	40.00	40.00	40.40	41.00	41.00	41.50	41.00
1977	41.35	41.50	41.60	41.60	42.00	42.25	42.25	42.25	42.40	42.75	43.20	43.20
1978	42.90	43.25	43.25	43.25	43.40	43.40	43.40	43.10	43.25	43.00	43.25	43.25
1979	43.25	43.25	43.25	43.25	43.25	43.00	42.70	42.70	42.20	42.20	41.00	40.75
1980	40.00	38.00	35.00	32.00	32.00	31.50	31.50	30.00	28.50	28.00	28.00	27.00
1981	25.00	25.00	25.00	25.00	25.00	24.25	23.50	23.50	23.50	23.50	23.50	23.50
1982	23.00	23.00	22.50	20.75	20.50	19.25	18.25	17.00	17.00	17.50	19.75	20.25
1983	21.50	21.75	22.25	23.25	23.50	23.50	24.00	24.00	24.00	23.50	22.50	22.00
1984	20.50	17.50	17.00	17.75	17.75	17.50	17.50	17.50	17.50	16.00	15.50	15.25
1985	15.00	15.00	15.00	14.25	15.00	15.00	15.75	16.00	16.00	16.50	16.75	17.00
1986	17.00	17.00	17.25	17.25	17.00	17.00	17.00	17.00	17.00	17.00	16.75	16.75
1987	16.65	16.75	17.00	17.00	17.00	16.90	16.75	16.65	16.65	16.75	16.65	16.55
1988	16.30	16.15	15.90	15.75	15.40	15.10	14.75	14.15	13.75	13.15	12.50	11.75
1989	11.60	11.20	10.70	10.10	9.85	9.80	9.80	9.70	9.60	9.40	9.20	9.00
1990	8.85	8.70	8.80	8.80	9.25	11.60	11.70	11.45	10.10	8.35	9.80	9.70
1991	9.10	9.50	9.30	9.10	9.20	9.05	8.55	8.75	8.40	7.25	7.40	8.75
1992	**8.00**											

US Premium (Relative to the Exchange Value)

Year	Determined as of the last day of the month indicated ($US/lb U3O8)											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1986	—	—	—	—	—	—	—	—	—	—	0.65	0.75
1987	0.85	1.00	1.50	1.50	0.90	0.60	2.50	2.35	2.10	1.65	0.85	0.65
1988	0.70	0.50	0.15	0.25	0.60	0.00	0.00	0.00	0.00	0.00	**Discontinued**	

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HISTORICAL MARKET DATA

UF_6 Values

Year	Determined as of the last day of the month indicated ($US/kg U as UF_6)											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1985	—	—	—	40.50	42.50	42.50	44.00	44.50	44.50	46.00	46.00	47.00
1986	47.00	48.00	48.00	48.50	48.25	48.25	48.25	48.00	48.00	48.00	48.00	47.75
1987	47.75	48.00	48.00	48.00	47.75	47.75	47.50	47.00	46.75	47.00	47.00	47.00
1988	46.50	46.00	45.50	45.25	44.75	44.00	42.75	41.00	40.75	39.00	37.50	35.50
1989	34.75	34.00	33.00	30.50	30.25	30.25	30.00	29.75	29.75	28.25	27.75	26.50
1990	25.90	25.25	24.40	24.40	25.50	32.00	32.50	32.25	29.50	24.75	28.75	28.75
1991	27.50	27.75	27.50	27.25	27.60	27.25	25.75	26.25	25.50	22.75	22.75	26.00
1992	**24.50**											

US Premium (Relative to the UF_6 Value)

Year	Determined as of the last day of the month indicated ($US/kg U as UF_6)											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1986	—	—	—	—	—	—	—	—	—	—	2.50	2.50
1987	2.50	2.50	3.50	3.00	2.25	1.75	6.50	6.00	4.25	3.10	2.25	2.00
1988	1.25	1.25	0.50	0.50	1.00	0.00	0.00	0.00	0.00	0.00	**Discontinued**	

Conversion Values

Year	Determined as of the last day of the month indicated ($US/lb U as UF_6)											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1981	1.20	1.20	1.20	1.40	1.15	1.15	1.15	1.10	1.10	1.10	1.20	1.20
1982	1.20	1.20	1.20	1.20	1.00	1.00	1.00	0.90	1.10	1.60	1.45	1.45
1983	1.20	1.40	1.40	1.20	1.20	1.20	1.10	1.10	1.00	0.60	0.60	0.60
1984	0.60	0.30	0.80	0.80	0.80	0.00	0.00	0.80	1.00	1.00	0.80	0.80
1985	1.00	1.00	1.00	1.50	1.50	1.60	1.60	1.60	1.60	1.60	1.60	1.60
1986	1.60	1.80	1.90	1.80	1.80	1.80	1.80	1.90	1.90	1.90	1.80	1.80
1987	1.80	1.80	1.80	1.80	1.80	1.80	1.90	1.90	1.90	1.90	1.90	1.90
1988	1.90	1.80	1.80	1.80	1.80	1.80	1.85	1.95	1.95	1.95	1.95	1.95
1989	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.90	1.90	1.80	1.75	1.65
1990	1.50	1.50	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
1991	1.45	1.45	1.45	1.45	1.50	1.50	1.50	1.60	1.55	1.55	1.55	1.55
1992	**1.60**											

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Transaction Values

Determined as of the last day of the month indicated ($US/lb U_3O_8)

Year	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1976	—	—	—	—	39.60	39.70	39.70	40.40	40.30	40.60	40.70	40.70
1977	41.30	41.30	41.40	41.50	42.80	42.90	43.00	42.60	42.50	42.80	42.90	42.90
1978	43.10	43.30	43.70	43.60	43.60	43.20	43.30	43.40	43.40	43.60	43.40	43.70
1979	43.60	43.80	43.70	43.40	43.60	43.70	43.70	43.60	43.60	43.60	43.50	42.30
1980	42.00	39.30	38.60	38.40	37.90	37.60	37.30	31.60	30.60	29.00	28.70	27.70
1981	27.20	27.20	27.00	25.70	25.70	24.50	24.40	24.30	23.90	24.10	24.10	24.00
1982	24.00	23.70	23.40	22.60	22.70	21.50	20.30	19.10	17.30	17.00	17.55	18.80
1983	19.35	20.00	21.35	21.40	22.35	22.45	23.50	23.60	23.65	23.65	23.85	23.85
1984	23.05	22.50	19.25	17.90	17.00	16.50	16.60	16.40	16.55	16.05	15.90	15.90
1985	16.20	15.70	15.05	14.90	14.45	14.60	14.75	15.10	15.10	15.75	15.80	16.55
1986	16.5	16.70	16.70	17.10	17.15	17.20	17.50	17.45	17.35	17.25	17.30	17.35
1987	17.35	16.90	16.95	17.00	17.20	17.10	17.30	17.55	18.20	18.05	17.80	17.20
1988	16.85	16.65	16.55	16.45	16.10	15.80	15.45	15.00	14.50	14.40	13.30	12.50
1989	12.25	12.00	11.25	11.00	10.75	10.45	9.95	9.80	9.80	9.65	9.55	9.40
1990	9.25	9.05	8.75	8.65	8.55	8.80	9.75	10.80	11.40	10.10	9.30	9.15
1991	9.40	9.45	9.35	9.30	9.30	9.20	9.15	8.95	8.70	8.35	7.45	7.50
1992	**7.55**											

SWU Values

Determined as of the last day of the month indicated ($US per SWU)

Year	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1986	80	80	80	80	75	78	78	78	78	78	80	80
1987	80	80	77	77	75	73	75	75	73	69	73	73
1988	73	73	70	68	68	68	68	65	65	65	65	65
1989	65	67	67	67	66	66	66	65	63	59	57	54
1990	54	50	50	50	50	50	50	50	50	51	51	51
1991	51	50	52	52	54	59	66	67	67	68	68	70
1992	**71**											

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HISTORICAL MARKET DATA

Loan Rates

Year	Determined as of the last day of the month indicated (Percent per Annum)											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1968	—	—	—	—	—	—	—	4.00	4.00	4.00	4.00	4.00
1969	4.00	4.00	5.00	5.00	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00
1970	6.00	6.20	6.40	6.50	6.50	6.50	6.50	5.00	6.50	6.00	5.50	5.50
1971	5.00	4.75	4.75	4.75	5.00	5.25	5.25	5.25	5.25	5.25	4.50	4.50
1972	4.00	4.00	4.00	4.50	4.50	4.50	5.00	5.00	5.00	5.00	5.00	5.00
1973	5.50	5.50	5.75	5.75	6.00	6.25	7.00	7.00	7.00	7.00	7.50	8.00
1974	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
1975	8.00	7.00	7.00	7.00	7.00	6.50	6.50	6.50	6.50	6.50	6.50	6.50
1976	6.50	6.50	6.50	6.50	*	*	*	*	*	*	*	*
1977	*	*	*	*	6.50	6.50	6.50	6.75	7.25	7.25	7.25	7.25
1978	7.25	7.00	7.00	7.00	7.00	7.50	7.75	7.75	7.75	7.00	7.00	7.00
1979	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
1980	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
1981	7.00	7.00	7.00	7.00	7.00	5.50	5.50	5.50	5.50	6.00	6.00	6.00
1982	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
1983	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
1984	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
1985	6.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
1986	5.00	5.00	5.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
1987	3.00	3.00	3.00	3.00	3.00	3.00	3.00	4.00	4.00	4.00	3.50	3.50
1988	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
1989	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
1990	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
1991	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.00
1992	**3.00**											

* Float with Prime Rate

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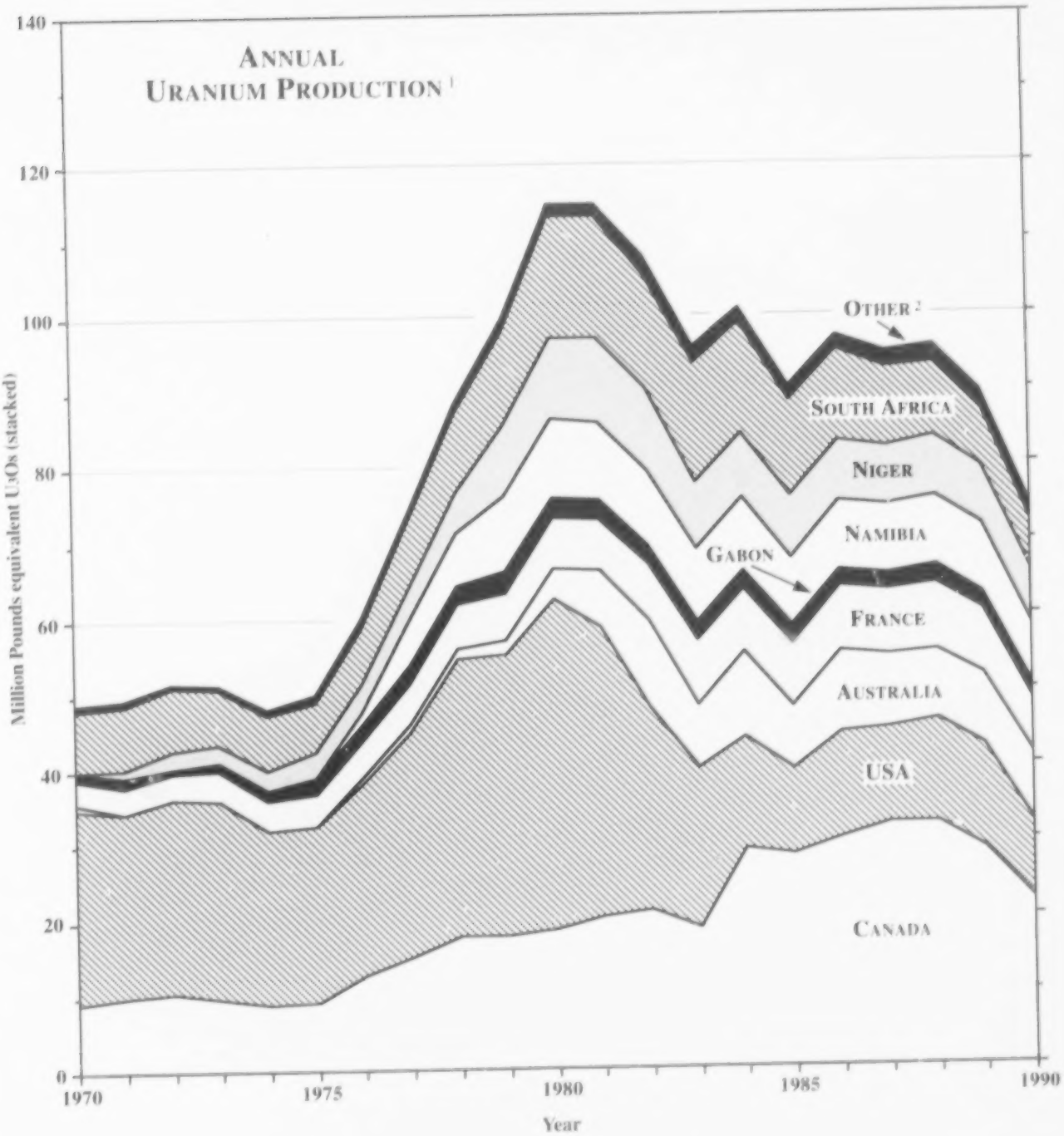

[1] Estimated world uranium production in 1990 totalled 74.5 million pounds equivalent U_3O_8 — (Australia: 9.1 – Canada: 22.0 – France: 7.4 – Gabon: 1.8 – Namibia: 8.0 – Niger: 7.4 – South Africa: 6.4 – USA: 10.2 – Other[2]: 2.2)

[2] **Other** includes: Argentina, Belgium, Brazil, India, Pakistan, Portugal, Spain, western Germany, and Yugoslavia

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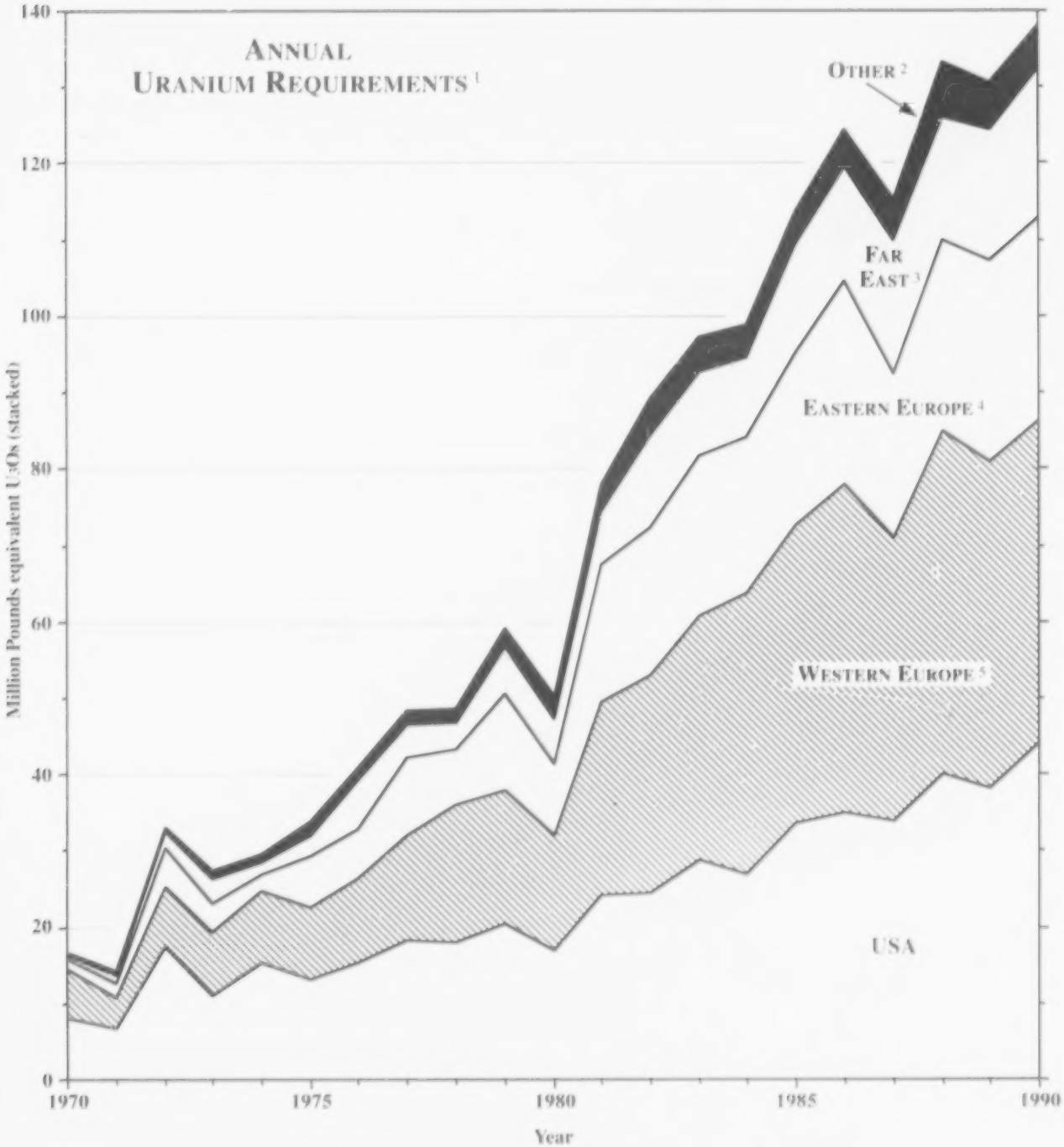
HISTORICAL MARKET DATA



[1] Calculated by NUEXCO based on actual completion dates and operating performance, and NUEXCO's estimate of enriching tails assay.
[2] **Other** includes: Argentina, Brazil, Canada, India, Mexico, Pakistan, and South Africa.
[3] **Far East** includes: Japan, People's Republic of China, South Korea, and Taiwan.
[4] **Eastern Europe** includes: Bulgaria, Czechoslovakia, E. Germany, Finland, Hungary, USSR, and Yugoslavia.
[5] **Western Europe** includes: Belgium, France, W. Germany, Italy, The Netherlands, Spain, Sweden, Switzerland, and UK.

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Australia

Year	Period [1]	Consumer Price Index [2] (1980/1981 = 100)	Price Index of Materials Used in Manufacturing Industry — All Groups [3] (1984/1985 = 100)	Average Weekly Ordinary Time Earnings — Adult Males — Australia [4] (Australian dollars)	Award Rates of Pay Indexes Australia - Adult Males In Mining Wage Earners, Weekly Rates [5] (June 1985=100)
1980	Avg.	95.8	83.1	—	69.6
1981	Avg.	105.0	85.9	—	76.1
1982	Avg.	116.7	89.0	—	86.4
1983	Avg.	128.5	96.9	—	89.9
1984	Avg.	133.6	98.0	—	96.0
1985	Avg.	142.6	107.3	—	100.0
1986	Avg.	155.5	101.5	—	104.9
1987	Avg.	168.7	108.9	465.88	112.9
1988	Avg.	180.9	111.8	496.90	115.4
1989	Avg.	194.6	117.0	534.65	126.0
1990	Avg.	208.7	123.4	571.43	129.7
Jan	1991	—	125.6	—	130.9
Feb	1991	—	121.5	597.70	130.9
Mar	1991	214.1	119.1	—	131.2R
Apr	1991	—	117.6	—	131.4R
May	1991	—	117.8	592.00	131.4R
June	1991	214.4	120.4	—	131.4R
July	1991	—	120.4	—	131.4R
Aug	1991	—	119.9	599.50	131.7
Sept	1991	215.7	118.3	—	132.0R
Oct	1991	—	118.7	—	132.0
Nov	1991	—	120.6	—	132.0
Dec	1991	217.7	—	—	—

P = Preliminary **R** = Revised since last month

[1] Monthly data for the period 1967 to 1990 appears in Report 278.
[2] Weighted average of six State capital cities (1975 to 1980), and eight capital cities from 1981 (Base: Financial year July 1980 to June 1981 = 100.0). Figures shown at end of quarter represent quarterly average.
[3] Australian Bureau of Statistics, Canberra: "Price Index of Materials Used in Manufacturing Industry" (Catalogue No. 6411.0).
[4] Australian Bureau of Statistics, Canberra: "Award Rates of Pay Indexes, Australia" (Catalogue No. 6312.0). Figures for the latest fourteen months shown are subject to revision.
[5] Australian Bureau of Statistics, Canberra: "Average Weekly Earnings, States & Australia" (Catalogue No. 6302.0).

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GOVERNMENT STATISTICS

Canada

		Industrial Products Price Index: All Commodities[1] (1986 = 100)[2]	Consumer Price Index: All Items (1986 = 100)[3]	Wage-earner Data: Average Hourly Earnings (C$)[4] Uranium Mines (SIC 057)	Metal Mines (SIC 051-059)	Mines, Quarries and Oil Wells (SIC 051-099)	Metal Rolling, Casting and Extruding (SIC 298)	Chemicals and Chemical Products Industries (SIC 372-379)
1980	Avg.	75.9	67.2	—·—	—·—	—·—	—·—	—·—
1981	Avg.	83.6	75.5	—·—	—·—	—·—	—·—	—·—
1982	Avg.	89.0	83.7	—·—	—·—	—·—	—·—	—·—
1983	Avg.	92.1	88.5	17.22	14.86	14.18	10.67	11.09
1984	Avg.	96.3	92.4	17.89	15.85	14.97	11.11	11.68
1985	Avg.	99.0	96.0	18.53	16.47	15.56	11.85	12.12
1986	Avg.	100.0	100.0	19.38	16.70	15.76	12.28	12.58
1987	Avg.	102.8	104.4	20.12	17.15	16.11	12.58	13.20
1988	Avg.	107.2	108.6	20.91	18.51	16.95	13.17	13.77
1989	Avg.	109.4	114.0	21.97	20.02	18.41	13.71	14.16
1990	Avg.	109.7	119.4	22.90	20.93	19.12	14.62	15.28
Jan	1991	111.1	125.0	23.79	21.79	19.78	14.66	15.89
Feb	1991	110.6	125.0	25.23	22.45	20.13	14.63	16.10
Mar	1991	109.8	125.5	24.19	22.22	20.27	15.21	16.47
Apr	1991	109.1	125.5	24.77	22.50	20.31	14.63	16.64
May	1991	108.6	126.1	24.38	22.17	20.25	15.05	16.55
June	1991	108.5	126.7	23.58	22.13	19.90	14.65	16.51
July	1991	108.2	126.8	24.70	22.33	19.93	14.56	16.36
Aug	1991	107.8	126.9	23.78	22.01	20.00	14.62	16.24
Sept	1991	107.6	126.7	24.23	22.27	20.38	14.89	16.47
Oct	1991	107.6	126.5	24.40R	22.26R	20.53R	15.06	16.55R
Nov	1991	107.5	127.0	24.57P	22.40P	20.91P	14.87P	16.66P
Dec	1991	107.6	126.4	—·—	—·—	—·—	—·—	—·—

P = Preliminary **R** = Revised since last month

[1] Statistics Canada, Prices Division, Ottawa: "Industry Price indexes" (Catalogue 62-011). Indexes for the most recent six months shown are subject to revision. This category was formerly known as "Manufacturing." Monthly data for the period 1967 to 1990 is found in Report 278.

[2] New Base Year of 1986 as of Report 266. Previous Base Year was 1981.

[3] New Base Year of 1986 as of Report 264. Previous Base Year was 1981.

[4] Statistics Canada, Labour Division, Employment and Payrolls Section, Ottawa: "Employment, Earnings and Hours." Monthly data for the period 1983 to 1990 is found in Report 278.

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South Africa

		Average Declared Working Costs per Metric Ton of Gold Ore Milled [1] (Rand)	Tonnage-Weighted Index of Average Working Costs per Metric Ton of Gold Ore Milled [2] (March 1982 = 100)	Consumer Price Index [3] (1990 = 100)	Production Price Index All Groups [4] (1985 = 100)	Total Employment in Mining and Quarrying [5]	Total Salaries and Wages in Mining and Quarrying [5] (1,000 Rand)
							Annual Total [6]
1980	Avg.	35.50	—	25.5	55.2	709,042	2,237,689
1981	Avg.	41.87	—	29.4	62.7	722,918	2,756,928
1982	Avg.	47.23	103.9	33.7	71.4	702,041	3,181,584
1983	Avg.	51.88	115.0	37.8	79.0	700,901	3,563,282
1984	Avg.	58.95	130.3	42.2	85.6	711,511	4,134,390
1985	Avg.	68.70	151.7	49.1	100.0	724,587	4,778,612
1986	Avg.	80.18	177.9	58.2	119.6	756,637	5,767,950
1987	Avg.	95.01	223.1	67.6	136.2	751,864	6,911,395
1988	Avg	106.69	241.1	76.2	154.1	705,355	7,774,054
1989	Avg.	116.65	273.0	87.4	177.5	700,360	8,833,934
1990	Avg.	129.37	305.3	100.0	198.9	677,742	10,193,209
							Monthly Total
Jan	1991	—	—	107.7	216.1	648,944	935,839
Feb	1991	—	—	109.0	216.9	650,948	893,373
Mar	1991	137.66	323.82	110.0	215.3	651,843	924,930
Apr	1991	—	—	111.5	216.5	639,939	887,722
May	1991	—	—	113.2	218.4	630,481	887,107
June	1991	134.65	317.23	114.0	219.3	640,908	890,595
July	1991	—	—	115.5	221.2	637,581	881,182
Aug	1991	—	—	117.1	222.8	613,704	934,308
Sept	1991	137.11	329.05	118.7	225.2	624,450	993,251
Oct	1991	—	—	119.8	228.3	—	—
Nov	1991	—	—	122.2	229.4	—	—
Dec	1991	134.81	327.83	123.8	—	—	—

P = Preliminary **R** = Revised since last month

[1] Chamber of Mines of South Africa, Johannesburg: "Analysis of Working Results," published quarterly. Historical Data by month appears in Report 278.

[2] Page 16 of Report 178 contains description and calculation of index.

[3] Central Statistical Service, Pretoria: All income groups-weighted average, Historical Data by month appears in Report 278.

[4] Central Statistical Service, Pretoria: All commodities for consumption in South Africa.

[5] Central Statistical Service, Pretoria: Historical Data by month appears in Report 236.

[6] Annual total is shown, rather than monthly average, for indicated year.

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GOVERNMENT STATISTICS

United States

		Producer Price Index [1]		Consumer Price Index [2]	GNP Implicit Price Deflator [3]	Gross Average Hourly Earnings of Production or Non-supervisory Workers (US$) [4]			
		Industrial Commodities (1982 = 100)	All Commodities (1982 = 100)	(1982-1984 = 100)	(1982 = 100)	Metal Mining (SIC 10)	Primary Non-ferrous Metals (SIC 333)	Chemicals and Allied Products (SIC 28)	Electric and Electronic Equipment (SIC 36)
1980	Avg.	88.0	89.8	82.4	85.7	10.26	10.63	8.31	6.94
1981	Avg.	97.4	98.0	90.9	94.0	11.55	11.98	9.12	7.62
1982	Avg.	100.0	100.0	96.5	100.0	12.31	12.93	9.96	8.21
1983	Avg.	101.1	101.3	99.6	103.9	12.58	13.43	10.58	8.66
1984	Avg.	103.3	103.7	103.9	107.7	13.05	13.43	11.07	9.04
1985	Avg.	103.7	103.2	107.6	110.9	13.38	13.74	11.57	9.46
1986	Avg.	100.0	100.2	109.6	113.9	12.46	13.48	11.98	9.65
1987	Avg.	102.6	102.8	113.6	117.7	12.52	12.98	12.37	9.88
1988	Avg.	106.3	106.9	118.3	121.3	13.24	13.26	12.71	9.79
1989	Avg.	111.6	112.2	124.0	126.3	13.59	13.72	13.09	10.05
1990	Avg.	115.8	116.3	130.7	131.5	14.10	14.36	13.54	10.32
Jan	1991	119.3	119.0	134.6	—	14.73	14.63	13.85	10.60
Feb	1991	117.2	117.2	134.8	—	14.80	14.55	13.81	10.59
Mar	1991	115.6	116.1	135.0	134.8	14.93	14.55	13.85	10.55
Apr	1991	115.6	116.0	135.2	—	14.85	14.56	13.96	10.63
May	1991	116.1	116.5	135.6	—	14.79	14.52	14.01	10.66
June	1991	116.1	116.4	136.0	136.1	14.88	14.51	14.05	10.74
July	1991	116.0	116.1	136.2	—	15.09	14.56	14.16	10.77
Aug	1991	116.3R	116.2	136.6	—	14.82	14.64	14.06	10.78
Sept	1991	116.2	116.0	137.2	136.9	15.04	14.59	14.21	10.84
Oct	1991	116.6	116.4	137.4	—	14.94R	14.75R	14.25	10.78R
Nov	1991	116.7	116.4	137.8	—	15.21P	14.92P	14.31R	10.87R
Dec	1991	116.1	115.9	137.9	—	—	—	14.37P	10.95P

P = Preliminary R = Revised since last month

[1] US Bureau of Labor Statistics, Washington, DC: "Producer Prices and Price Indexes," (formerly "Wholesale Prices and Price Indexes"). Producer Price Indexes are revised four months after they are first released to reflect the availability of late reports and corrections by respondents Historical data is presented in Report 278.

[2] US Bureau of Labor Statistics, Washington, DC: Consumer Price Index for All Urban Consumers, US City Average, All Items. Historical data is presented in Report 278.

[3] US Department of Commerce, Washington, DC: Bureau of Economic Analysis, National Income and Wealth Division: "Survey of Current Business." The GNP Implicit Price Deflator is published quarterly, and seasonally adjusted. Historical data is presented in Report 278.

[4] US Bureau of Labor Statistics, Washington, DC: "Employment and Earnings." All data based on 1972 revision of SIC Manual. Historical data is presented in Report 278.

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Volume and Price of Uranium Deliveries To The European Community [1]

— Compiled from data published by the Euratom Supply Agency —

Year	Volume of Deliveries to the EC [2] (MTU)	Percentage of Deliveries Made Under Spot Contracts	Medium or Long-Term Contracts [3] Average Price		Spot Contracts [3] Average Price	
			in ECU per pound U_3O_8	in US Dollars per pound U_3O_8	in ECU per pound U_3O_8	in US Dollars per pound U_3O_8
1977	n/a	n/a	n/a	n/a	n/a	$41.00
1978	n/a	n/a	n/a	n/a	n/a	$43.00
1979	10,000	n/a	n/a	n/a	n/a	$44.50
1980	8,600	n/a	n/a	$36.00	n/a	$35.00
1981	13,000	less than 10	n/a	$33.25	n/a	$28.00
1982	12,500	less than 10	ECU 32.25	$32.00	ECU 24.25	$24.00
1983	13,500	less than 10	ECU 34.75	$31.00	ECU 26.00	$23.25
1984	11,000	less than 10	ECU 37.75	$29.75	ECU 24.50	$19.25
1985	11,000	11.5	ECU 38.00	$29.00	ECU 19.50	$15.00
1986	12,000	9.5	ECU 31.50	$31.00	ECU 18.00	$17.75
1987	14,000	17.0	ECU 28.25	$32.50	ECU 15.00	$17.25
1988	12,500	4.5	ECU 26.92	$31.82	ECU 13.65	$16.13
1989	13,500	11.5	ECU 26.63	$29.35	ECU 11.04	$12.19
1990	12,800	16.7	ECU 23.08	$29.39	ECU 7.60	$ 9.68

P = Preliminary **R** = Revised since last month

[1] The twelve European Community member nations are Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, The Netherlands, Portugal, Spain, and the United Kingdom; prior to January 1986, Spain and Portugal were not members of the EEC.

[2] The only deliveries taken into account are those made to final users, namely the electric utilities or their procurement organizations; deliveries to middlemen or fuel cycle companies are not included. The sales between utilities in the Community are also excluded. The quantities covered are those which were entered into accounting records during the year stated.

[3] For deliveries made under medium or long-term contracts (i.e., for which the time between the date of signature and the date of the last delivery exceeds one year) the prices were expressed in seven different currencies. In order to calculate an average price, these prices have been converted into European Currency Units (ECU) and US dollars. The average prices were weighted by quantity and converted on the basis of the average annual exchange rate of the different currencies against the ECU and US dollar. Exchange rates are published by European Communities Statistical Office and the International Monetary Fund.

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GOVERNMENT STATISTICS

US Uranium Marketing Activities Statistics

— Compiled from data published by the US Energy Information Administration [1] —

Year	Total Production (million pounds U_3O_8)	Deliveries to Domestic Utilities From US Suppliers [2] (million pounds U_3O_8)	Average Price of Delivered Uranium [2] ($/lb. U_3O_8)	Quantity of Uranium Imported [3] (million pounds U_3O_8)	Average Price of Imported Uranium ($/lb. U_3O_8)	Quantity of Uranium Exported (million pounds U_3O_8)
1976	25.5	27.6	$16.10	3.6	n/a	1.2
1977	29.9	27.8	$19.75	5.6	n/a	4.0
1978	37.0	31.6	$21.60	5.2	n/a	6.8
1979	37.5	33.0	$23.85	3.0	n/a	6.2
1980	43.7	35.0	$28.15	3.6	$43.10	5.8
1981	38.5	32.6	$34.65	6.6	$32.90	4.4
1982	26.9	23.5	$38.37	17.1	$25.19	6.2
1983	21.2	24.2	$38.21	8.2	$26.16	3.3
1984	14.9	22.5	$32.65	12.5	$21.86	2.2
1985	11.3	21.7	$31.43	11.7	$20.08	5.3
1986	13.5	18.9	$30.01	13.5	$20.07	1.6
1987	13.0	20.8	$27.37	15.1	$19.14	1.0
1988	13.1	17.6	$26.15	15.8	$19.03	3.3
1989	13.8	18.4	$19.56	13.1	$16.75	2.1
1990	8.9	20.5	$15.70	23.7	$12.55	2.0

P = Preliminary **R** = Revised since last month

[1] Sources: 1976-1983: US Department of Energy/Energy Information Administration, *Survey of United States Marketing Activity.*
1984-1990: Energy Information Administration, *Uranium Industry Annual.*

[2] Data for 1976-1981 includes both domestic utilities and agents.

[3] Includes imports by domestic utilities and domestic suppliers.

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